THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES.

MARCH, 1893.

HYSTERICAL RAPID RESPIRATION, WITH CASES; PECULIAR FORM OF RUPIAL SKIN DISEASE IN AN HYSTERICAL WOMAN.[1]

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of Philadelphia.

It is some years since first I called attention to the subject of the rapid breathing of certain hysterical patients. Since then I have seen it often—indeed, within six months four times. Several of these cases were of unusual value, because long under my care or so situated as to admit of graphic representation of the respiration types.

The phenomenon must be rare, as I find no allusion to it since my own paper, in 1883. A male case, by E. Bischoff,[2] reported in 1874, has to me the look of hysteria, but such can hardly be said of Brinton's and my own male case,[3] in which the rapid breathing was the reflex result of traumatism of the lung. This extraordinary case is still alive. In both of the cases just referred to, the type of respiration, though rapid, was deep and apparently laborious at times, so as always to lack the effortless regularity and seeming naturalness of the rapid hysterical breathing.

I have now seen so many of these cases connected with hysteria that I am able to formulate as to them certain conclusions.

The breathing is largely upper costal, sometimes exclusively so. It

[1] Read before the College of Physicians, December 7, 1892.

[2] Deutsche Arch. f. klin. Med., Bd. xii. p. 262.

[3] Transactions of the Philadelphia College of Physicians, 1870.

is exceptional to find the relative share, as between chest and diaphragm, preserved. As a rule, the breathing is slight in amount—that is, superficial, but without appearance of effort. Usually, or early in the case, the patient is ignorant of the existence of the symptom. When this knowledge is once acquired the respiration rate is increased by excitement, even by the mere approach of nurse or doctor. In certain persons the symptom occurs only just after sleep, and may be quite absent in sleep—indeed, it is usually so. In some cases this symptom is almost the only distinct expression of hysteria, or is not present at all until the patient is emotionally excited. The number of respirations goes up and down rapidly, and without any marked coincidental change of pulse. This type of breathing is not a possible voluntary product. The effort of a healthy person to breathe as fast as these patients breathe causes exhaustion, and the graphic record is irregular and unlike that of hysteria. (See tracings.) Cases in males are more rare, and cannot always be with certainty regarded as hysterical. I shall speak of them further when quoting the cases referred to by Bischoff and that of Brinton and the author.

Dr. Coates[1] has reported a number of cases of rapid breathing. They were all people who believed, or were made to think, they had diseased lungs. From the attention they were thus led to give to these organs arose types of rapid breathing.

Case I., a woman, aged thirty years, had rapid respiration from presumed pulmonary malady. By making her count twenty without inspiring she was led to take a deep breath.

Case II. is unimportant.

In Case III., a girl, aged nineteen, there was presumption of tuberculosis, but no real lung disease. Her breathing was shallow and rapid.

Case IV., a girl, aged sixteen, was enabled by deep and abrupt quick breaths to stimulate for a time the strong, lifting impulse of cardiac hypertrophy. Two other cases are given, but in none is the number of respirations mentioned.

In 1883 Dr. E. Mackey[2] described a girl, seventeen years old, who, while sitting up in bed, breathed from eighty-eight to ninety-three times per minute, with now and then convulsive gasps. Her pulse was feeble, and beat sixty-four times to the minute. Temperature, 99° F. She had had "chlorotic anæmia" and a loud systolic basal bruit, which was still so loud as to mask all other chest sounds. Morphine and atropine overcame the peculiar respiration symptom, but on the third day it rose to 88–128, and thereafter the case displayed a large variety of hysterical symptoms. The respiration was shallow and short.

[1] W. M. Coates: Brit. Med. Journ., July 5, 1884.
[2] Edw. Mackey: Lancet, February 10, 1883.

The author calls attention to the difference between this and the rapid but deep breathing of certain cases of diabetic coma.

Dr. Bristowe,[1] amongst other hysterical disorders, seems to speak—if I do not misapprehend him—of hysterical dyspnœa with asthmatic symptoms. In one case there was rapid breathing, cough, and bloody expectoration, with no rise of temperature. He goes on to say that simple excess in the rate of breathing may be seen in hysteria. In the case of a woman, thirty or forty years old, with other hysterical signs, there were spells of rapid breathing, seventy or eighty respirations to the minute, and lasting from a few minutes up to several hours—the pulse remaining normal in frequency.

In my *Lectures on Nervous Diseases*[2] I gave several illustrations of this curious phenomenon. It is only necessary to refer to them. The one male case of rapid breathing there stated was seen by Dr. Brinton and myself, and is probably alone in the records of medicine as a case of rapid breathing (50–125)—caused by bullet wound of chest. The quick respiration is said to have come immediately upon the wounding of the lung. The constant dyspnœa, the type of breathing, which was normal, and other features, set this case apart from all others I have seen. Certainly it was not hysterical. In the same lectures I called attention to the diagnostic value of *rapid upper costal* respiration as sometimes of use in arousing suspicions as to the presence of hysteria in conditions of disease which would not otherwise suggest its presence. In some forms of insanity we may have rapid breathing, but the type has, in all such cases seen as yet by me, been normal and not merely costal, or with scarcely visible abdominal movement. Thus in wild mental excitement from any cause, and in acute mania, the respiration may rise to forty or higher, but, as a rule, the heart is then also in too rapid motion, and the chest movements are merely exaggerations of the normal action, and never, I believe, peculiar like those seen in hysteria. I saw but recently another illustration of the diagnostic fact just stated. A lady, aged sixty-two years, consulted Dr. John K. Mitchell, complaining of the following symptoms: Passive refusal to speak; no aphonia; great feebleness; absolute anorexia; much flushing of the face. I was inclined to regard the case as one of the forms of melancholia, until Dr. Mitchell called to my attention the fact that always on awaking, or from the excitement of a visit, her respiration rose at once to 50 or 60 without rise of pulse. The breathing was upper costal. He was inclined to think that hysteria was the dominating element in her case, and although I did not at first agree with him, his conclusion proved finally to be the correct one.

[1] Bristowe: Lancet, June 20, 1885.

[2] Second edition, p. 198 et seq.

Some of the most puzzling diagnoses we are called upon to make are those in which a serious fall has left the patient palsied or unconscious. Occasionally the rest of the symptoms which appear grave, are betrayed as hysterical by the rapid rate of the respiration—a thing so constantly overlooked that, save in acute pulmonary diseases, it is rarely stated.

I have seen, very lately, in consultation a lady who suffered from the fall of a block of wood on her head. She dropped insensible and remained thus for several days, her condition causing great alarm to her friends and immediate medical attendant. The pupils were largely dilated. There was no apparent palsy. The insensibility was not profound, but to appearance deepened slowly for several days. She awoke from this state at the end of a week, and thereafter had frequent vomiting; fixation of head—it could be turned from side to side, but not bent backward. The upper cervical region was sensitive, and pressure caused vomiting. The pulse was 80; the muscle reflexes all in excess; sensation was normal in all its forms. Meanwhile there was constant headache, but healthy eye-grounds. Many things in this collection of symptoms puzzled me. The case had very little of that look of hysteria on which one gets used to relying. But, the respiration was 50, and upper costal, and my decision, that all the phenomena were hysterical, has since been amply justified by the developmental changes of the case.

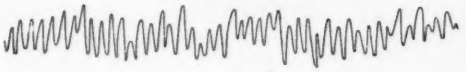
The following very remarkable case I give in full from Dr. Burr's notes:

CASE I. *Case of hysterical knee-joint; relief; relapse; long trance condition; alleged fast of sixty four days; recovery; aphonia; rapid respiration; unusual form of skin disease; failure of hypnotic treatment.*—The patient, a female, single, now twenty-four years of age, was first brought to the Infirmary for Nervous Diseases in November, 1883. The following notes were then taken:

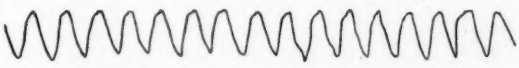
Family and personal history negative. When fifteen years old she fell on her left knee while playing in the yard. She was carried into the house, put to bed, and for six weeks suffered much pain. The pain gradually disappeared, but she was unable to walk on the affected limb, and wore a bandage to support the knee. By this means she was able to walk with comparative ease. After a few weeks she removed the bandage. Almost immediately she fell, injuring the knee again. After the fall she was unconscious a short time. She was kept at perfect rest in bed for a month, the knee bandaged, and splints applied. For two years she suffered much pain, and was unable to do any work. She walked with crutches. Soon after this she had a violent attack of "hysteria." Dr. Halberstadt, of Pottsville, was called to see her. Dr. Halberstadt writes me: "When I was called to see Miss C. she complained of intermittent pain in the head, left eye and foot, ears, and left thumb. The eyes were sensitive to light. Arms and legs rigid. Marked sweating. Respiration was 180, and pulse so rapid that I could not count it. This I saw continue for two hours, but her mother declared it had

been going on for five weeks. The whole body moved at each inspiration, and her appearance was that of being worked by machinery. I

TRACINGS. (CASE I.)

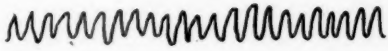


Attempt to simulate rapid shallow breathing by a man in health



The lower lines mark seconds, the upper the respiration curves. Rate, 60 per minute.

1



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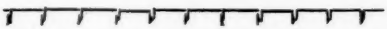
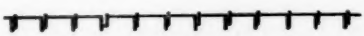


1. Respiration (126 to the minute).
2. Time (seconds).



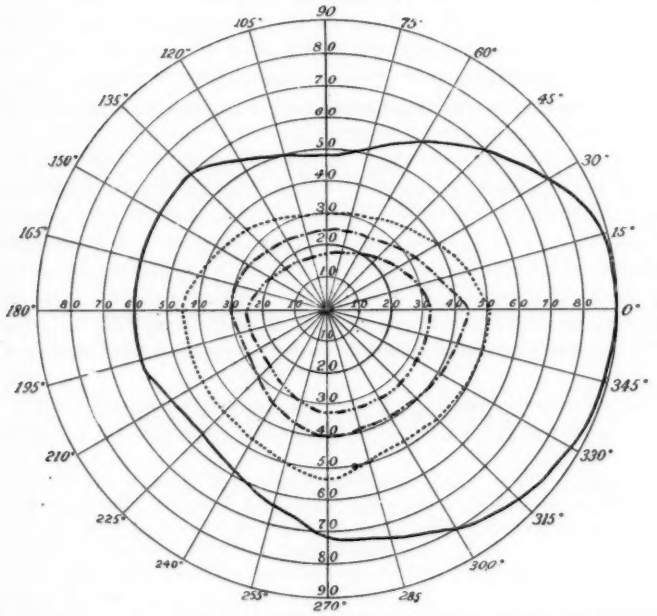
Tracing showing hysteric cough.

could detect no disease of the kidneys or uterus." At this time she was seen by a physician from Philadelphia, who pronounced her case hope-

less. She slowly improved, and finally could walk with the knee bandaged.

Her condition on admission to the Infirmary, in November, 1883, was as follows: No wasting, except that the lower third of the right thigh measured five-eighths of an inch more than the left, and the right knee one and three-eighths inches more than the left. The temperature was the same on both sides. The electrical reactions were normal. Dr. Mitchell

DIAGRAM I.



Field of vision of right eye for white, blue, red, and green. The outer continuous line indicates the limit of the form field; the broken lines the limits of the color fields, which are concentrically contracted.

White ———— Red –·–·–·–·–·–·–·–·–

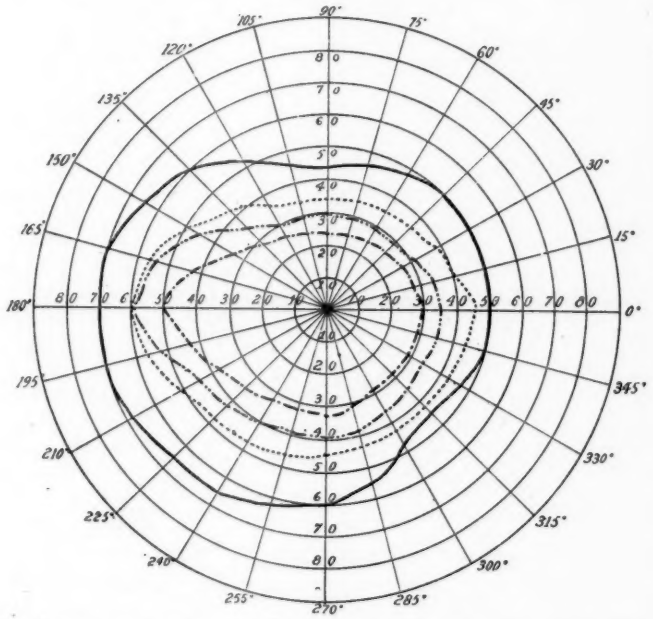
Blue ..... Green –··–··–··–··–··–

pronounced the case to be one of hysterical knee-joint. After one month's treatment with massage and faradism she was discharged cured.

Examination made on readmission to the Infirmary, March 22, 1892. Patient says that on leaving the Infirmary she still limped. In the autumn of 1888, on the left leg, in the place where the ulcer now is, small pimples appeared, after the application of a "strengthening wash." On being told, July 7, 1889, that her father was dead, she fell into a "trance," which lasted into October. It is alleged by her family that during this time she was watched night and day. Her sister states positively that she received nothing to eat or drink during the trance, ex-

cept that after the beginning of September she swallowed small quantities of water. She was given an injection weekly, which was always followed by a natural stool. She passed no urine. The bed was never even moist. The eyes were shut, and resistance was made on raising the lids. Respiration could be detected only on the closest inspection. She never moved nor even winked. Her face was yellow, but she did not lose flesh. Three or four times daily she would throw up large

DIAGRAM II.



Field of vision of the left eye for white, blue, red, and green. The outer continuous line indicates the limit of the form field; the broken lines the limits of the color fields. There is contraction of both form and color fields, the form field having suffered proportionately the greater contraction.

White ———— Red –.– –.–.–.–.–.–.–

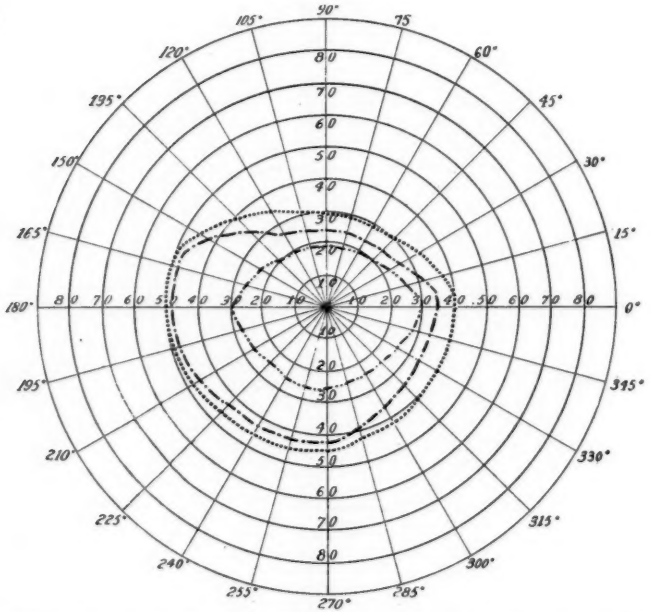
Blue ..... Green –..–..–..–..–..–..–

quantities (sometimes enough to stain eighteen towels) of a dark-reddish fluid containing clots. The faradic battery was used on the arms and legs for five weeks without effect. Until five weeks before awaking, people had been permitted to see her, and she was, indeed, on exhibition. After this was stopped she one day suddenly, without known cause, awoke, crying bitterly. She denied all recollection of what had occurred during the "trance." The left arm and leg were powerless. She could not feel the faradic battery when applied to that side. Speech

was whispering. While in the "trance" the pimples spoken of above became confluent, and a thick crust formed.

Present state. Well nourished. Respiration varies from 120 to 150 per minute. It is shallow, almost entirely upper costal, and perfectly regular in rhythm. If the nose and mouth be held closed the respiratory movements continue, and after about one minute she makes one deep inspiratory effort. During sleep respiration falls to 18 or 20. The

DIAGRAM III.



Field of vision of the left eye for blue, red, and green. The broken lines indicate that the limits of the color fields are contracted. The blue and red lines coincided in the horizontal meridian of the temporal side, but this is not accurately shown in the diagram.

Blue ..... Red –.–.–.–.–.–.–.–

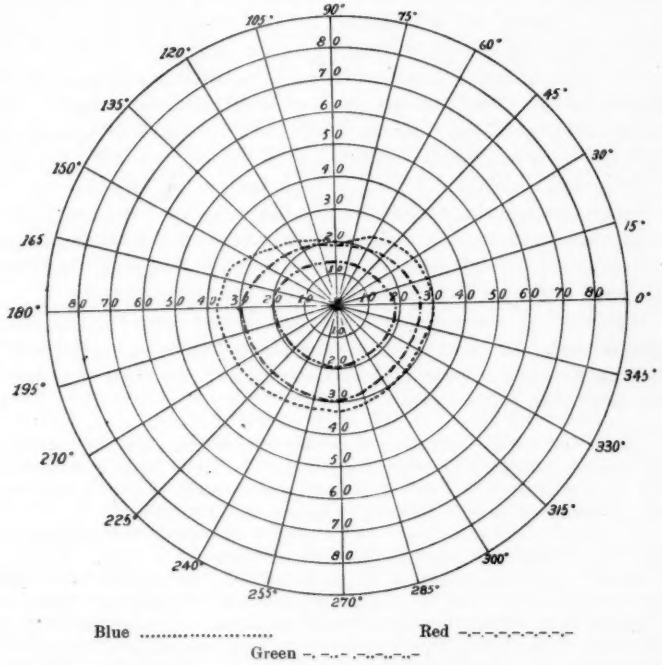
Green –..–.–.– –.–.–

rate is increased when she knows she is under observation. She has frequent barking cough. The pulse averages 100 per minute. There is no wasting. When in bed she can move the left leg perfectly well against resistance, but drags the left foot when walking. Station is good. Knee-jerk is plus Clonus is absent. The plantar reflex is marked. The elbow-jerk is present. Dynamometer: R., 95; L., 70. She is right-handed.

The tactile sense is hard to determine on account of the slight reliance that can be placed on her statements. The left side is more sensitive to

pain than the right. Covering a large part of the anterior aspect of the leg from above the ankle to below the knee is a thick, broad crust resembling very much the bark of an old tree. It is dark-gray and much fissured. (See colored plate.) On removing the crust, while the patient was hypnotized, there was found under it a grayish-white fibrinous material, from the surface of which oozed a little blood. Around the edges the skin was thickened, somewhat hardened and hyperæmic.

DIAGRAM IV.



The area was very sensitive. (The crust is in the museum of the College.)

Dr. de Schweinitz examined the patient's eyes, and reported: "Conjunctiva insensitive; pupils normal in reaction; good fusion power; no lesions in the fundus oculi. In the *right eye* the form field is normal in extent, there is contraction of the color fields, but they occupy their normal position. In the *left eye* there is considerable contraction of the form field, and in the horizontal meridian of the temporal side the red and blue lines of the color fields coincide. This may be seen in Diagrams I. and II., and also in Diagram III., representing the color fields alone, and taken one month later. In this chart it is evident that there is slight increase in the contraction of the color fields, but in other respects it is closely similar to the other diagrams. The

field of vision for colors taken during a semi-hypnotic condition shows that there was no material difference in color sense of the patient during this and the normal state, except that the color field is markedly contracted and that the blue and red lines practically coincide in the vertical meridians both above and below. This may be seen in Diagram IV."

REMARKS.—Both Dr. Burr and I repeatedly hypnotized this woman, but neither he nor I was able to see any good result. She became, under hypnotic influence, insensible to pain, and I was then able to remove from her leg the accumulated crusts. I hoped to get her, while hypnotized, to tell me the mode in which she had carried on her deceit as to her fasting, but I failed entirely. The tracings obtained for me in this case show very well the speed of breathing (see tracings). The partial influence of an order to breathe deeply, which, in the waking state, had no effect, was well seen in one of my tracings which has been unfortunately mislaid. I have added the curves obtained by the efforts of one in health to breathe like the patient. Their irregularity as contrasted with the forms of the hysterical curves of breathing is very interesting. I did this case no good whatsoever, because of her being in a ward where she was the subject of not unnatural curiosity.

Dr. Duhring's examination of the skin disease completes this interesting record. It is placed at the close of this paper. A careful search leads me to agree with Dr. Duhring in regarding this form of skin disease as of most unusual type.

CASE II.—S. M., female, aged twenty-one, single, mulatto. Applied for treatment at the Infirmary, September 10, 1891. There is no obtainable family history, and, owing to the woman's want of intelligence, her own symptoms and past history are inadequately related.

In 1887 she is said to have had a sharp bronchitis which lasted all winter and was accompanied with loss of voice for a year. This was probably hysterical, since in December, 1887, she suffered with colic, out of which arose a seven months' siege of varied hysterical symptoms, with frequent severe headaches and numerous convulsions of grave hystero-epileptic type. She was seven months in bed, but knows little of what passed. In May, 1888, she was taken to St. Luke's Hospital, New York, in a comatose state, and so remained four days. Having improved somewhat, she went home, where soon again she became wildly hysterical. Fits of severe character and two hours' duration were followed by stupor lasting many hours. This condition was present up to the time of her admission to the Infirmary.

At this date Dr. Hirst reports her generative organs normal, except that the womb is rather undeveloped. There is no ovarian tenderness and no evidence of epilepto-genetic spaces there or elsewhere. She has imperfect pain-sense on the left side—leg, arm, and body—with paresis of both legs and the left arm. The abdominal and thoracic viscera show no signs of disease. Appetite and digestion are normal. There is no anæmia. The knee-jerk is markedly increased. There is slight clonus—from three to five jerks. The pulse is normal; temperature

normal. Respiration varies from thirty to fifty per minute. It is of upper costal type chiefly, but at times the abdomen and lower ribs move. Generally it is difficult or impossible to distinguish the least motion in the diaphragm. During sleep the respiration rate falls to twenty per minute. These peculiarities of breathing were not known to the patient, They seemed to cause no fatigue, although to breathe voluntarily as she did, very soon produces exhaustion in the healthy. She improved rapidly as to all her hysterical symptoms except the breathing.

Case III.—C. M., female, aged nineteen, single. At the age of seventeen years the patient had, after a slight accident in driving, some tenderness in the spine, and after a year, upon a fright after exposure in a thunderstorm, partially lost her voice. This was at times better, or well, but in March, 1890, she had laryngitis, with a sharp attack of the grippe, and then abruptly lost all voice except power to whisper. She was told in New York that it was not hysterical, but a rare form of loss of power in the abductor muscles of the larynx. Electricity gave no relief. The aphonia improved in the late summer. It is said to be nearly well, but the voice is easily tired. Up to November 23, 1891, when I first saw her, she had been very emotional and hysterical; tears and attacks of rigidity continued to trouble her. At this time she is in good flesh, rosy, and to appearance well, but relies much on her mother, and is at all times easily made hysterical. Her blood is close to normal in number of corpuscles and amount of hæmoglobin. All the digestive, renal, and menstrual functions are well performed. There is no ovarian tenderness.

Sensation. She is over-sensitive to a pinch of the muscles. The arms, back, and abdomen, but not the face, present small analgesic areas, irregular in form, one to two inches wide, and varying in location from day to day. There is no loss of sense of touch, locality, or temperature. The legs present no analgesic areas. There is pain in the back along the spine and over the loins. It is worse on exertion, and at times absent. There is constant severe pain in the posterior aspects of both legs in the gluteal regions. This is apparently a muscular trouble, since in all these parts pressure is painful.

Locomotion. When supine she can move all limbs well, and both extended legs can be lifted together. When erect she sways with jerky recovery of position. With the eyes shut this is enormously increased, presenting a true type of the hysterical ataxia I was the first to describe. Thus, when erect with the feet together, for a moment all is well, then she sways forward or backward or right or left eight or ten inches, and with an abrupt effort recovers her upright position, only to fall to and fro anew. Her walk is better, but is not quite regular, and she drags the left foot with the toes outward. The knee-jerk is much increased. There is slight ankle clonus—five or six movements—on the right. On the left it is absent. The bladder action is normal. All motion wearies her quickly. Her pulse is usually higher at night, but is very changeable. The respiration also varies, but on the least excitement rises and remains high for an hour or more. Massage, electricity, my visits, etc., all increase the respiration rate. Her pulse and respiration averaged as follows:

Respiration	. . 40	Pulse	 80
"	. . 30	"	 75
"	. . 60	"	 85

She was put at rest, forbidden to speak for three weeks, and given localized faradic currents and daily massage. She made a good recovery, but only after some months won complete use of all her powers.

I have seen, as I have said, other cases and many of this type of rapid hysterical breathing, but the cases here given may suffice.

Remarks by Dr. Duhring.

I had the good fortune, through Dr. Mitchell, to see Case I. a few weeks ago. The disease had existed three or four years, and there were several remarkable points about the crust. It differed in character from the known crusts, as those of late syphilis, and those from simple ulcer. It differed from syphilis in that it was made up largely of epithelium and not of dried pus. This was verified by the microscope. This, too, was manifested on seeing the lesion of the skin proper without the crust. There was no ulceration beneath the crust, but the epithelial layer and rete mucosum were atrophied and diseased. The papillary layer was reddened and infiltrated as seen in chronic tinea favosa. The cause and origin of this lesion and the crusts must be considered together, as they are a part of the disease. The interpretation of the cause as suggested by Dr. Mitchell, namely, that it is of nervous origin, is, I believe, correct. It is due to a degeneration of the nervous system, giving rise to local trophic disturbance of the skin. We may designate it as a peculiar trophic crusted disease of the skin. The state of the whole nervous system is accountable for this disease. It is a local manifestation of a general neurotic affection, and not a disease produced by changes in a single nerve or set of nerves.

The nature of the disease, pathologically, is an inflammation of the skin and subdermal tissue of a low type, due to aberrations of local nutrition. Sarcoma and other similar ulcerative or crusted diseases are not suggested by the appearance of the lesion. It is very difficult to class such cases in dermatology. It bears some resemblance, from a pathogenic standpoint, to keratoma and callosity. The disease may be grouped with such cases as that of the one described and portrayed in the second number of the *International Atlas of Rare Skin Diseases*, by E. Besnier, with the title "Keratodermia Erythematosa." In regard to the crusts on bromide ulcers, if they are examined they will be found to be made up of sebaceous matter and pus—they are, in fact, largely puriform in character. I saw a noted case in London, shown to me by my friend Dr. Tilbury Fox. I have a photograph of it. The crusts were the size of a hand and were made up of sebaceous matter and pus.

MOVABLE KIDNEY; WITH A REPORT OF TWELVE CASES TREATED BY NEPHRORRHAPHY.[1]

By George M. Edebohls, A.M., M.D.,
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In the opinion of the writer there is scarcely a subject of more practical importance and interest to the gynecologist than that of movable kidney. This conviction has steadily grown upon him since his attention was first attracted to the subject, nearly four years ago, since which time he has had abundant opportunity to note both the frequency of its occurrence in women and the important interdependent relations between movable kidney and diseases of the female sexual organs.

Indeed, in view of the fact that the subject of movable kidney has been more or less fully treated of within the past dozen years by Hahn, Landau, Keppler, Pokrowsky, Lindner, von Fischer, Litten, Henderson, McCosh, Keen, Senator, Schmitt, and others, it is astonishing how little is known of it— or, at least, how little practical application is made of this knowledge by both general practitioner and gynecologist. The latter could have found in it a solution of many perplexing difficulties which beset him in daily practice. Why, for instance, a woman the lesions of whose genital tract have been successfully repaired by the gynecologist's art, and in whom no organic lesion can be discovered elsewhere, should after operation, in spite of the gynecologist pronouncing her well, persist in asserting the contrary and in clinging to most, if not all, of her former symptoms, would no longer be an enigma. The solution, in many instances, might be found in the vicinity of the renal regions. There, also, in not a few instances, can be found the explanation of symptoms usually interpreted as dependent upon disease of the female genital organs, when a most critical and painstaking examination of those organs fails to reveal the least evidence of disease. Instances illustrating both of the above assertions I have repeatedly encountered in my own practice, and a few of them will be found recorded in the histories of cases appended to the end of this article.

The main explanation, to my mind, of the existing general apathy and indifference to a subject of such great practical importance lies in the hitherto unsatisfactory therapeutics of the condition. A movable kidney is, in the vast majority of cases, one of the easiest things in the world to diagnosticate, provided only its possibility in a given case be borne in mind. But when it comes to treatment, bandages have proved

[1] Read before the Section on Obstetrics and Gynecology, New York Academy of Medicine, October 27, 1892.

inefficient; nephrectomy is a too radical and unjustifiable procedure; nephrorrhaphy has hitherto proven more or less disappointing, owing, as the writer believes, to imperfections of technique; massage has been too little tried, and meets with too general incredulity. It is one of the main purposes of this paper to furnish evidence that nephrorrhaphy, carefully performed after the method to be described later on, is capable in most, if not all, uncomplicated cases of movable kidney, of correcting the abnormality, and of relieving greatly or removing entirely the symptoms dependent thereon.

Frequency.—The frequency of the condition has been variously estimated by different writers, depending probably upon the greater or less fidelity with which each patient presenting is examined for the existence of the condition, as well as upon varying individual ability to recognize the minor degrees of the abnormality. While some authorities assert that movable kidney is of very rare occurrence, Lindner, for instance, states that he found it in one out of every five or six women examined. My experience has satisfied me that Lindner is very nearly, if not quite, right. I have taken the trouble to look over the histories of the last 500 women examined by me, and among them I find 90 recorded as possessing, amongst other things, a movable kidney. I am confident that a similar experience awaits every gynecologist who will make it a matter of routine to examine every woman consulting him for the existence or otherwise of the condition. I should, however, not like to be understood as asserting that every movable kidney produces symptoms. On the contrary, I am convinced from personal observation that such is not the case, and that many owners of movable kidneys experience no noticeable discomfort from the condition. Just here lies the difficulty: to determine exactly what symptoms, in a given case, are probably due to a movable kidney, inasmuch as the lesion is so frequently associated with disturbances in the genital sphere and many symptoms are common to the two conditions.

Further on I hope to show, however, that this differentiation may be made with reasonable accuracy in nearly all cases.

Etiology.—The etiology of movable kidney is still greatly a matter of speculation and theory, and it will probably require considerable added experience, and perhaps experiment, to satisfactorily elucidate this part of the subject. Bartels is inclined to regard lacing as a causative factor in both men and women. I am led from my own observations to believe that the very opposite is the case, and that tight lacing is the most effective external agent we can apply to maintain a kidney in its normal position. Indeed, I am in the habit of prescribing a well-fitting and rather tight corset for women with movable kidneys, provided no contra-indication to the corset is found in the condition of the genital organs. In the few cases in which I have met movable kidneys in men, I have

advised the wearing of a tight elastic abdominal supporter, the main compression being made about the waist.

Laxity of the abdominal parietes, the result mainly of childbearing, has been regarded by many as a causative agent of movable kidney. This hypothesis, however, will not bear close scrutiny. It loses its value when we consider that as many, if not more, movable kidneys are found in virgins and nulliparæ as in multiparæ. The statistics of Lindner show this, and my own experience bears him out. That, however, laxity of the abdominal walls bears a certain, though small, share in the etiology of the affection, I am not prepared to deny.

The theory of a congenital anomaly or predisposition to the disease is one difficult to either prove or disprove. For the present it is a mere conjecture as far as concerns *movable* kidney; a *floating* kidney may depend upon a congenital mesonephron.

The theory which upon critical and judicial review of the cases under my observation seemed most satisfactorily to account for the development of the condition in a majority of instances, is that of absorption or atrophy of the peri-renal fat. It has been quite a common experience with me to note the beginning of symptoms due to movable kidney immediately after recovery from one of the wasting diseases, or on the occurrence of a noticeable loss of weight from any cause. My own clinical observation, therefore, would seem to indicate that loss of peri-renal fat is the chief etiological factor in the production of movable kidney, though I am inclined to believe that other causative agencies may play a part, less important and frequent though it be, in the development of the disorder. It is quite easy, for instance, to understand how excessive and prolonged vomiting might occasionally loosen a kidney, as in a case reported by Dr. C. O. Baker (*N. Y. Medical Record*, May 14, 1892). The patient, himself a physician, first noticed the development of a movable tumor (kidney) in the right hypochondrium after a voyage in which he suffered much from incessant sea-sickness. Even in this case, however, rather clearly as the evidence points to vomiting as the cause, it may be questioned whether the movable kidney was not a result of the wasting of fat, including the peri-renal, due to the prolonged inanition.

A movable kidney may rarely develop quite suddenly, as in the case just mentioned, or the condition may be of more or less rapid growth. While the majority of movable kidneys undoubtedly require months, and even years, to develop, I have several times been in a position to observe the development of a mobility of six to eight centimetres in a kidney which, from personal examination, I knew to be in its proper place two or three months previously. One or two such instances are narrated in the appended histories.

For practical purposes a distinction should be made between movable and floating kidney, although the latter condition probably represents,

in some instances at least, but the final stage of development of the former. A movable kidney, as I interpret it, is one movable within a pouch or hollow formed within its own fatty capsule; while a floating kidney is one supplied with a mesonephron, the length of which determines the extent of its mobility. The floating kidney has normal relations with its fatty capsule, or at least that portion of the latter which it carries with it in its excursions. The movable kidney, for reasons which will appear further on, produces more distressing symptoms than the floating kidney, although the latter has by far the greater range of mobility. The movable kidney is by far more frequent than the floating kidney. I have met at least fifty movable kidneys to every one floating kidney, and it is with the movable kidney alone that this paper has to deal.

Litten makes a further distinction between movable and wandering kidneys on the one hand and a dislocated kidney on the other hand. By the latter term I presume he means a displaced kidney fixed in its abnormal situation. I have met the latter condition but twice, the right kidney in each instance being fixed alongside the spinal column some eight centimetres below its normal position, and being insusceptible of reduction. A characteristic of the movable kidney is the facility with which it can be brought back to its normal situation.

Litten still further refines between a congenital wandering kidney (floating kidney?) and an acquired movable kidney. As used by the Germans, the term *Wanderniere* (wandering kidney) embraces both movable and floating kidneys. For reasons already stated, however, I prefer to maintain the distinction between the two.

The path of dislocation of a movable kidney varies. In a proportion of cases, estimated at 75 per cent. by Lindner, it becomes displaced outward and then forward and inward along the course of the lower ribs until it reaches the region of the anterior superior iliac spine. In the remaining cases it moves directly inward and downward. Whatever may have been the original path of dislocation, the result, as far as the final position of the movable kidney is concerned, will be the same as soon as the organ has attained a range of mobility of ten to twelve centimetres. When this range of mobility has been attained, the kidney can be readily moved about anywhere within the segment of a circle whose centre is at the normal situation of the kidney, whose radius measures ten to twelve centimetres, and whose arc extends from the vicinity of the anterior superior spine of the ilium to the under surface of the liver.

The subject of movable kidney is of paramount importance to the gynecologist, because of its preponderating frequency in women as compared with men, and because its symptoms are so similar in many respects to those accompanying various lesions of the genital sphere.

Perhaps, however, the comparative frequency of its occurrence in the sexes is not as great as usually supposed. Abdominal palpation is practised much more frequently upon the female than upon the male, and the gynecologist, with tactile sense sharpened by daily practice in bimanual examination, is much more likely to discover minor degrees of the lesion than is the general practitioner. And it is just these minor degrees that are the unrecognized cause of so much suffering and distress.

My practice being exclusively gynecological, I am scarcely in a position to estimate from personal observation the frequency of the occurrence of movable kidney in the male. I have seen but two cases in men, both of them during the past year. Both were personal friends, who, in speaking of their health, casually mentioned a combination of symptoms, such as is usually found associated with movable kidney. In both, upon examination, I found the right kidney movable to the extent of about ten centimetres.

Movable kidney, in women at least, occurs on the right side in the overwhelming majority of cases. I have seen the condition but four times on the left side, in three of the patients the right kidney being movable at the same time and to a greater degree than the left. In the fourth patient (Case I.) the left kidney became movable six months after fixation, by nephrorrhaphy, of a movable right kidney. Why the right kidney should so much more frequently become movable than the left I can only surmise. Perhaps it is more exposed to displacing influences on account of its situation immediately beneath the liver, a heavy organ, subject to great fluctuations in size and weight.

Symptoms.—As already stated, many of the symptoms of movable kidney are common also to many diseases of the sexual organs in women. The symptoms of the earlier and of the later stages of movable kidney differ considerably from each other, those of the earlier stages being by far the more distressing. The suffering, according to my observations, seems to be greater with a kidney movable from four to ten centimetres; after the latter limit of mobility has been exceeded the symptoms generally abate in intensity and some of them disappear altogether. Quite enough morbid manifestations, however, remain to make the patient more or less a chronic invalid. It is but just to state, however, that this observation of the greater severity of the symptoms in the earlier stages of movable kidney, as compared with the later, does not harmonize with the experience of Lindner and others, who claim that the greater the degree of mobility the more severe and numerous the symptoms.

I will first describe what I consider to be the most prominent and characteristic combination of symptoms, as I have found it, in *uncomplicated* cases of movable right kidney, in which the mobility ranges

from ten centimetres downward; enumerating subsequently the other symptoms more or less frequently observed. *The morbid phenomena due to a movable right kidney in its earlier stages are: digestive disturbances, chronic in character; general nervousness; epigastric pain, usually located somewhat to the left of the median line, at or near the free border of the left costal cartilages; cardiac palpitation; inability to feel comfortable or to sleep when lying on the left side.* These symptoms, or as many of them as may be present in the particular case, are all more or less constant and chronic in character. When disease of the genital apparatus is associated with movable right kidney, the symptoms immediately become more manifold, and it requires close clinical study to differentiate between the manifestations belonging to the renal and the genital abnormality, especially as a movable kidney exceptionally produces symptoms such as dysmenorrhœa and atypical uterine hemorrhages which generally point to lesions of the genital tract. I will, therefore, dwell somewhat upon the symptoms above enumerated as usually accompanying movable kidney, before enumerating the other morbid manifestations more or less frequently observed.

The digestive symptoms usually observed are, in their order of frequency: anorexia; gaseous eructations; epigastric pain and distress, most severe from half an hour to three hours after meals; constipation; occasional vomiting; foul breath. Quite a number of patients suffering from movable kidney have been treated for years by the ablest practitioners for gastro-intestinal or intestinal catarrh before coming under my observation, and it is one of the most gratifying experiences to see how rapidly and completely these symptoms usually vanish after fixation of the movable kidney by a bandage or by nephrorrhaphy.

General nervousness, of greater or less degree, but always decided, is the next most frequent concomitant of movable kidney. There is nothing peculiar about this nervousness to distinguish it from that due to other causes. It disappears to a marked extent, though not as rapidly or completely as the digestive symptoms, after fixation of the kidney.

The epigastric pain associated with movable kidney is quite constant in its location, being generally referred to a point some five to six centimetres to the *left* of the median line, at or near the free border of the left costal cartilages. The nature and source of this pain are not quite clear. It is not markedly increased by pressure, and in this respect differs from an ordinary intercostal neuralgia. It appears to be independent of the digestive processes, occurring at any time, irrespective of the fulness or otherwise of the stomach. Landau calls it a cardialgia, and, for reasons to be explained later, I am of the opinion that this term is probably correct, albeit the pain is somewhat lower than that

of cardialgia from other causes. This pain also disappears promptly after the malposition of the kidney is rectified.

Cardiac palpitation is one of the most annoying and persistent symptoms. In some patients it is almost constant, and occasionally they become so habituated to it that they are unaware that their heart is beating rapidly, although the examiner may find the pulse 120 or more. This symptom, like the general nervousness, yields more slowly than the other symptoms after fixation of the kidney.

The last of the principal symptoms is inability to rest with comfort or to go to sleep lying on the left side. That this symptom is not by any means imaginary is attested by the frequency with which patients complain of it before they are informed that they have a movable kidney, and by its prompt and complete disappearance after fixation of the kidney.

Among the other symptoms which, compared with the above, occur with comparative rarity in uncomplicated cases of movable kidney, I will merely mention the following: Vertigo; a dull backache; painful menstruation; increase of the menstrual flow; pain in region of displaced kidney; mild urinary symptoms, such as intermittent hydronephrosis, moderate polyuria, slight frequency of micturition; icterus; anæmia due to interference with the digestive functions. It is unnecessary to dilate upon these symptoms; they are quite secondary in importance to the five symptoms above described.

It is quite curious and interesting to observe the influence of menstruation and pregnancy upon the symptoms of movable kidney, these being always intensified during menstruation and during the early months of pregnancy, while they completely disappear during the latter half of utero-gestation. The explanation is probably this: During menstruation and the early months of pregnancy the increased collateral flow of blood to the abdominal organs produces hyperæmia and increased weight of the displaced kidney, with intensification of the symptoms. During the latter half of pregnancy the uterine tumor pushes the kidney upward and supports it in its proper place in a better manner than can be done by any abdominal supporter. It has been an oft-repeated experience with me to have patients state that the only times at which they have felt well during many years past, ever since the beginning of their illness, was during the latter half of their pregnancies, whatever the number of the latter may have been. I have also noted in one case the appearance of symptoms of movable kidney immediately following the removal of a large ovarian cystoma. The cyst had, until removed, sustained the movable kidneys in their place, and thus kept the symptoms in abeyance.

Authors are not as yet agreed upon the mode of causation of the symptoms due to movable kidney. The majority of those who have

expressed themselves upon this subject are of opinion that obliteration of the lumen of the duodenum by the displaced kidney leads to retention of the contents of the stomach, and, as a result of this, secondarily to the production of the other symptoms above narrated. They differ somewhat in their views as to how this duodenal obstruction is brought about. Lindner, for instance, believes that the descending kidney obliterates the lumen of the duodenum by traction, claiming to have substantiated this view by experiments on the cadaver. Bartels, on the contrary, holds that the middle or descending portion of the duodenum is closed by direct pressure upon it of the displaced kidney.

With all due respect to these high authorities and those who agree with them, I am of opinion that mechanical occlusion of the duodenum is insufficient to account for the symptoms of movable kidney, even if the hypothesis of a mechanical occlusion of the duodenum occurring as a sequence of movable kidney could be proven true, which, as far as I know, has not hitherto been the case. I think the explanation of the symptoms must be sought in other directions, and personally am inclined to look for it in disturbances of the abdominal sympathetic system, more especially of the solar plexus with its branches distributed to the abdominal and thoracic viscera. After reading the extract from Gray's *Anatomy*, which I shall presently quote, it does not seem to me difficult to understand how a movable kidney, by pressure and traction, by stretching and irritation of various parts of the important sympathetic centre called the solar plexus, and of its branches, is quite capable of producing all the various sensations and functional disturbances noted under the head of symptoms. While all cases, to my mind, become explicable by this theory, the hypothesis of duodenal obstruction fails entirely to explain why the same series of phenomena occurs when either the right or the left kidney, or both, become movable. It may be claimed, and with justice, that the left kidney is rarely, if ever, movable alone, and that in this case the movable right kidney produces the symptoms. But Case I., narrated below—the careful perusal of which I would urge in this connection—has the value of a crucial experiment in determining this question, and to me was proof positive that a movable left kidney, the right being securely anchored in its place, is capable of producing exactly the same symptoms as a movable right kidney. Indeed, it was the observation of the progress of this case that led me to abandon the view of duodenal obstruction which I had previously held, and to seek another explanation of the causation of the symptoms of movable kidney. The following quotation is from Gray's *Anatomy*. (The italics are mine.)

"The epigastric or solar plexus supplies all the viscera of the abdominal cavity. It consists of a dense network of nerves and ganglia, situated behind the stomach and in front of the aorta *and crura of the*

diaphragm. It surrounds the cœliac axis and root of the superior mesenteric artery, extending downward as low as the pancreas and *outward to the supra-renal capsules.* This plexus, and the ganglia connected with it, receive the great splanchnic nerve of both sides, part of the lesser splanchnic nerves, *and the termination of the right pneumogastric.* It distributes filaments, which accompany, under the name of plexuses, all the branches from the front of the abdominal aorta."

This part of the subject would be incomplete without an allusion to the so-called "strangulated movable kidney," as described by Landau and later by Lindner, a typical illustration of which condition I have seen in but two instances. The symptoms then become acute; pain in the right side, vomiting, great restlessness, possibly a little febrile movement, occur; the urine is diminished in quantity. This condition lasts from two to four days, when, with increased secretion of urine, the symptoms rapidly disappear. Landau thinks an obstruction of the renal vein by torsion accounts for the strangulation, while Lindner regards the symptoms as due to temporary obstruction of the ureter, by torsion or kinking, thus producing hydronephrosis.

Diagnosis.—A movable kidney is, in my opinion, the easiest of all intra-abdominal conditions to diagnosticate. The diagnosis is made by the discovery of a movable tumor, of the size, shape, and consistence of the kidney, in the right hypochondriac or lumbar regions, or in the iliac fossa; in fact, by feeling a movable kidney in any other but its normal position. The recognition of a movable kidney is an easy matter, especially for the expert gynecologist whose tactile sense is educated by daily practice. With the patient in the dorsal position, and the thighs flexed to relax the abdominal parietes, the examiner sits at her right side, opposite the loins, and with his left hand passed under the small of her back, presses deeply into the renal region to either crowd the kidney out of its place, or to keep it from slipping unrecognized into its normal position while the examination is being made. The fingers of the right hand palpating the front and side of the abdomen usually recognize the displaced organ without difficulty. When it is detected it should be caught between the fingers of both hands and gently pressed until it escapes alternately upward and downward from between the compressing fingers. The contour of the upper and lower poles and the entire characteristic kidney shape of the tumor are thus recognized without the possibility of mistake. The majority of movable kidneys when thus moderately pressed and handled are not sensitive to pressure; in a minority of cases the patient complains of slight, quite bearable pain. Landau has found that pressure upon a movable kidney causes cardialgia. I have never elicited this symptom, but have often produced a slight nausea on compression of the displaced organ. Perhaps the difference in the sensations of the patient may be due to varying

degrees of pressure employed. The displaced kidney is almost uniformly of about normal size; in but five or six instances have I found it enlarged.

Should there be difficulty in palpating the kidney in the dorsal position, the left lateral decubitus (Sims's position), as recommended by Lindner, may be tried. I have myself never resorted to it. When I have failed, with the patient in the dorsal position, to dislodge a suspected movable kidney from its normal situation by pressure of the left hand applied to the back, I have always succeeded by directing the patient to sit upon the edge of a chair with the body inclined forward and the hands resting upon the knees. In this position I have never experienced difficulty in reaching a diagnosis. By employing this position, or the left lateral decubitus, the necessity of repeated examinations in doubtful cases, insisted upon by many authors, can be avoided.

Very rarely, indeed, should there be difficulty in distinguishing a movable kidney from other tumors of the abdomen, and reference to this part of the subject would scarcely be necessary were it not that errors have been made by the ablest diagnosticians. Thus in the case of Dr. Angus Mac——, already alluded to as reported by Dr. Baker, the patient acquired a movable tumor in the right hypochondrium as a result of prolonged vomiting from sea-sickness. Several clinicians of the highest reputation examined the tumor, and at least two of them pronounced it a movable kidney. The patient finally consulted Lawson Tait, who, ignoring previous opinions, made a diagnosis of distended gall-bladder and performed abdominal section. At the operation (presumably performed in the dorsal position), Tait found the gall-bladder and adjacent structures healthy and the "kidney *in situ*." He afterward said that the tumor was an hysterical tumor. Nephrorrhaphy was subsequently performed by Dr. Baker and the patient relieved of his long suffering.

It will thus be seen that a movable kidney may be mistaken for a distended gall-bladder. Attention to the shape and outlines of the tumor and to the range and direction of mobility should enable us to avoid this error.

The so-called "phantom or hysterical tumor" should never be mistaken for a movable kidney. If the hysterical tumor be due to intestinal distention, percussion will enable us to differentiate. If, as I believe is more frequently the case, the phantom tumor represents a localized spasmodic contraction of the abdominal muscles—most frequently of the recti—the expert fingers of the gynecologist should have no difficulty in detecting the condition. In very exceptional cases examination in narcosis would remove all doubt. I have myself never met with a case in which it was necessary.

A *movable* right kidney should never be mistaken for carcinoma of

the stomach or adjacent viscera, although the symptoms in many cases of movable kidney are similar in many respects to those of malignant disease of the abdominal viscera. A right kidney dislocated downward and *fixed* in its abnormal position—a rare condition, fortunately—may offer difficulties of diagnosis.

The error of confounding the symptoms of a movable kidney and those of a chronic intestinal or gastro-intestinal catarrh can only occur from failure to make a sufficiently painstaking examination, and is inexcusable at the present day.

PROGNOSIS.—A kidney once movable never again becomes *firmly* fastened in its *normal* position, except by operative interference. Its mobility, however, may be diminished by increased deposit of fat around the organ accompanying general improvement in nutrition. The intensity of the symptoms, whatever the latter be, remains about the same until the kidney attains a range of mobility of ten to twelve centimetres. After this range has been attained, and during the further increase in mobility, the symptoms are somewhat mitigated. The patient, however, as already stated, remains more or less a chronic invalid. A movable kidney may, however, become fixed in an *abnormal* position—rarely, I believe, by peritoneal adhesions, but rather by an induration or mild sclerosis of the fatty tissues surrounding it. A floating kidney, on the other hand, being contained in a fold of the peritoneum, may become fixed by agglutination of its peritoneal coat to neighboring peritoneal surfaces. When this occurs the symptoms are likely to become very distressing.

TREATMENT.—The dorsal decubitus will markedly mitigate or entirely remove, while it is maintained, the symptoms of movable kidney. It will, however, not lead to fixation of the kidney, no matter how long maintained, and the symptoms are certain to be reproduced on assuming the erect posture.

I know of one case, greatly benefited, though not cured, by the Weir Mitchell treatment of absolute rest in bed, forced feeding, massage, and electricity. The increased deposit of fat around the kidney probably explains the beneficial results, and the method may be tried in patients who can afford it, and who elect it after the alternatives have been fairly presented to them. Lasting relief can scarcely be expected, unless the obesity produced can be maintained or even increased. This amelioration of symptoms is, as already remarked, occasionally observed to follow improved nutrition without any special medication.

Eisenberg (*Wiener med. Presse*, 1891, No. 36) has reported successful results in the treatment of movable kidney by massage after Brandt's method. Further experience in this direction is needed before we can arrive at definite conclusions.

Abdominal supporters or bandages are relied upon by the majority

of those who recognize in movable kidney a pathological condition requiring treatment. In our resources against the condition it ranks second to nephrorrhaphy; but in my opinion it is a poor second. It will always appeal strongly to minds with anti-surgical bias, and I confess that until I saw my way clear to a more efficient and perfected nephrorrhaphy, with more uniform and lasting results than existing reports supplied, I preferred to relieve my patients as best I could with bandages. Even after I had gained some confidence in my ability to fix a movable kidney by nephrorrhaphy, I still advised the trial of a bandage to obtain relief before resorting to operative measures. Faithfully as I tried bandages, however, I must own that I accomplished little good with them. This might *à priori* be expected, as a movable kidney in the readiest manner escapes from beneath even the compressing hand, probably the most perfect pad as yet devised. Inability to obtain desirable results from the use of the bandage, and the almost absolute certainty of relief by nephrorrhaphy in cases selected after careful study as indicating fixation of the kidney, have led me latterly to urge nephrorrhaphy as the first resort to patients with movable kidneys producing decided symptoms.

A bandage, to be effective in retaining a movable kidney must support all the abdominal viscera and, through them, the displaced organ. The special compress or pad so generally used beneath the bandage over the front of the renal region is a delusion and a snare, the kidney escaping from beneath it with the greatest facility. It is scarcely consistent for one avowing a disbelief in the efficacy of bandages to follow such avowal by an expression of predilection for certain forms of bandages. Whatever little good, however, I have accomplished in this direction has been by a simple bandage of elastic webbing entirely encircling the whole abdomen and making as much compression as the patient can comfortably bear. A well-fitting, rather tight corset answers still better in males, and in women in whom no contra-indication to the wearing of a corset exists on the part of the sexual organs—a condition obtaining only in a minority of the cases I have seen.

Nephrectomy, or removal of the movable kidney, I mention only to condemn. It has no justification in this condition, while nephrorrhaphy, a much less dangerous and mutilating operation, can be made to yield results almost, if not quite, as good and positive.

Lindner, in 1887, collected 36 nephrectomies for wandering kidney, with 9 deaths, a mortality of 25 per cent. Of these 36 kidneys, 9 were removed by the lumbar incision without a death, whereas 25 were extirpated by cœliotomy with 9 deaths. In 2 cases the method of operation is not stated. This appalling mortality, I am inclined to believe, would be lessened by the addition of more recent cases.

Lindner also collected 29 nephrorrhaphies with 1 death. Adding thereto my own 12 cases with 1 death, makes 41 cases with 2 deaths, a

mortality of less than 5 per cent. This mortality rate would also, no doubt, be lessened by the addition of all published cases, of which I can recall quite a number, without remembering having read of an additional death.

(To be continued.)

A QUESTION OF WATER, ETHICS, AND BACTERIA.

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With our daily growing knowledge of the etiology of disease, and the discovery of the fact that the water which we daily use in our homes and houses is the most widely diffused and general bacterial culture-fluid, the feeling of responsibility connected with water diagnosis steadily increases. After an experience of twenty years, during which I have reported upon somewhat more than two thousand samples sent from a large proportion of our public supplies, and representing the most diverse kinds of water, I feel a more painful sense of this responsibility, and am at times more embarrassed in arriving at a decision than when I made my first analysis and report. This was upon the waters used by Jersey City, Newark, and Hoboken some twenty years ago.

An interesting experience of this nature has recently befallen me. It involves not only a question of ethics and moral obligations, but also certain doubts as to the practical value of bacteriology in deciding upon the wholesomeness and purity of a water employed for domestic use.

A sample of water was sent by a well-known engineer which had been taken from the well of one of his clients, whose house stands in perhaps the most beautiful of the residence-parks of suburban New York. It had so happened that the water of another well, located in the same park, had been sent just previously, and though affording better analytical data, had been condemned as dangerous and impure. But the water of the particular well I now refer to, for reasons given below, was pronounced safe and wholesome. To put the matter in clearer light, I shall run the risk of making my article somewhat formidable with technical terms and with figures, and shall give in detail the relative composition in parts per 100,000 of the two well-waters:

	Condemned water.	Approved water.
Color	Same	Same
Taste	Pleasant	Sparkling
Smell	None	None
Ammonia	0.006	0.0045
Albuminoid ammonia	0.008	0.0115
Oxidizing oxygen	0.071	0.20

	Condemned water.	Approved water.
Nitrous acid	None	Trace
Nitric acid	1.07	4.008
Chlorine	0.525	0.575
Total hardness	7.65	10.25
Permanent hardness	2.45	6.00
Temporary hardness	5.70	4.25
Total solids	13.10	23.13
Mineral matters	9.10	19.80
Organic and volatile matters	4.00	3.33

Dissolved gases measured at 0° C. and 7.60 mm. pressure:

	Condemned water.	Approved water.
Oxygen	6.15 cub. cent.	6.56 cub. cent.
Carbonic acid	9.47 "	23.53 "
Nitrogen	13.87 "	15.19 "
Total gases	29.59 "	45.28 "
Colonies of bacteria per cub. cent.	Innumerable	1674

The very pleasant taste of both waters, which in the approved arose to a lively sparklingness, like mild mineral water, was due to two causes: in part to the high percentage of salts, but still more to the great amounts of nitrates and of carbonic acid gas. Peculiar interest and significance are connected with the presence of these acid substances in such large quantities on account of the way and manner in which they were originated. Unquestionably they sprang from manure and substances of the nature of sewage which the water took up in its passage through the soil on its way to the well. Nitric acid is derived from sewage by the oxidation of its nitrogen and ammonia. And, lest anyone think there is a blunder in reporting this enormous quantity, amounting to 2⅓ grains to the gallon, let me say how it was determined. After trying for years the various customary methods of estimating the nitric acid in potable water by means of its reduction to the form of nitrogen and ammonia, by the indigo and other methods, I have given up all these methods, believing them to be untrustworthy. Instead of employing these methods, I reduce the nitric acid to the form of nitric oxide gas, and then measure the latter in a eudiometer. In this instance the nitric oxide obtained from ½ litre of the water, after its volume had been reduced to the normal temperature and pressure of 0° and 7.60 mm., amounted to 8.305 cubic centimetres. In order to prove that this great volume of gas was nitric oxide, and not some nitrogen or other gas resulting from extraneous substances, or some error in the conduct of the experiment, I passed up into the eudiometer a proper amount of oxygen gas. Nitric oxide has the property of combining with oxygen to form a dark-red gas known as nitrous acid. This is a most striking and characteristic phenomenon. On making the test with oxygen, these blood-red fumes appeared. The fumes were entirely absorbed by caustic soda, showing that no other gas than nitric oxide had been originally

present, and all that was present in the eudiometer was derived from the nitric acid of the water. Though almost incredible, there could be no further question of the fact—2½ grains of nitric acid to the gallon was certainly present in the water.

The carbonic acid came from sub-aërial oxidation of the carbon of organic matters, which, as I have already stated, consisted in this instance almost entirely of manure and sewage. To realize how excessive is the amount, call to mind the fact that the carbonic acid in New York City water varies from 9.50 c.c. in midwinter to 2.5 c.c. in late summer and autumn. Also, that the well-waters in its vicinage, which are ordinarily soft, contain only 3 to 5 c.c of carbonic acid.

But the feature *sui generis* was the nature and number of the bacteria. In both cases these bacteria belonged to a class which is known as nitrifying ferments. It has been definitely ascertained of late years that the direct oxidation of nitrogen and ammonia to nitric acid very rarely, if ever, occurs in nature. It is necessary to have the aid of minute living organisms, which are known as nitrifying bacteria, to effect this change. They act as ferments, similar to the way in which the yeast plant brings about the conversion of sugar into alcohol and carbonic acid. The absorption of oxygen is an essential and necessary part of the discharge of the vital functions of these nitrifying bacteria. They cause the oxygen to combine with the nitrogen of the ammonia and albuminous substances which are present, these substances disappearing, and their place being taken by nitric acid.

The number of bacteria in the condemned water was greater than I could count on the culture plates. The approved water, on the contrary, exhibited 1674 colonies per c.c. Just here came the rub. Professor Koch has set down 50 bacteria per c.c. as being, in his opinion, the limiting number which should be present in any water that is to be accounted wholesome and potable. As to the extent of his practical familiarity with water-supplies I have no knowledge. Wolfhügel found that the bacteria in the water of the Spree, from which a large part of the water-supply of Berlin is derived, were reduced by filtration from 3000 colonies in a c.c. to an average number of 107 colonies. This is by the use of the gravity filters constructed after the pattern of those commonly used in England. These filters are cleansed by scraping off the deposit of filth which forms on the upper surface of their filter-beds of sand. Their action is very slow. To show how different is their operation from that of the mechanical filters now extensively used in this country, I shall mention a few facts which are not generally known to the medical and engineering professions.

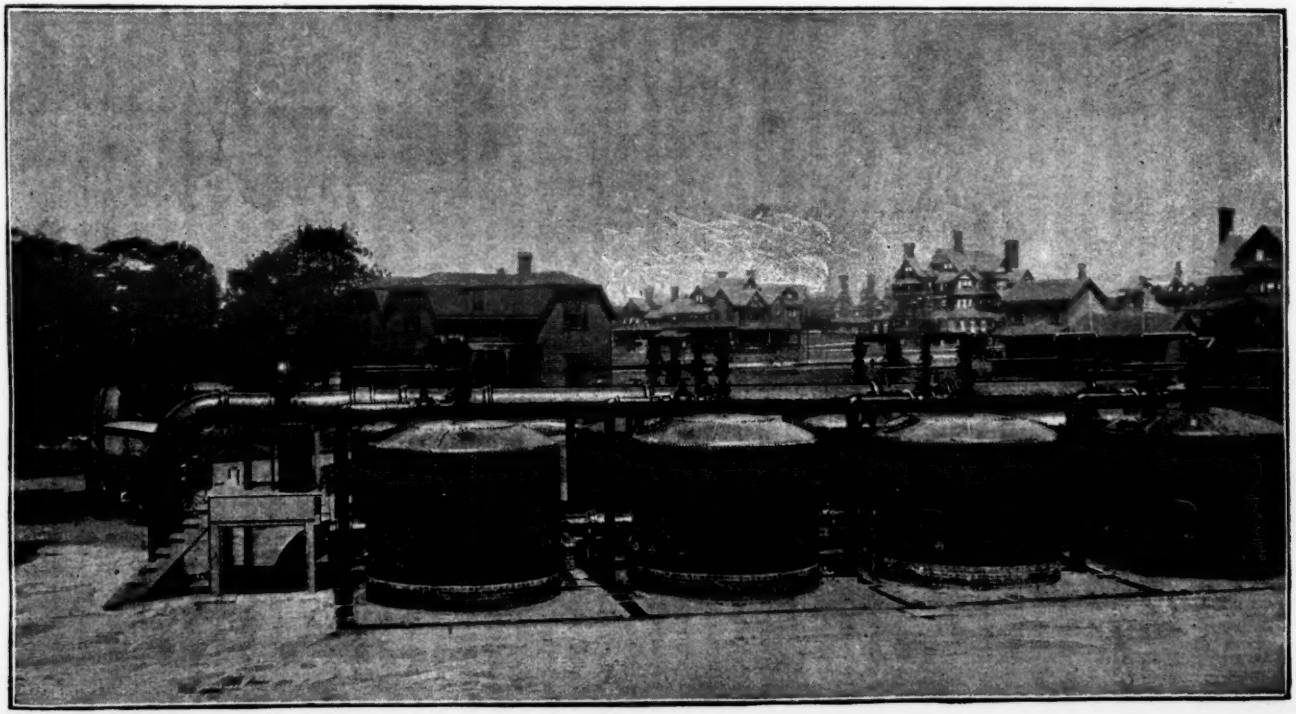
At the present time the only method by which the city of Philadelphia can be supplied with pure water at a moderate and reasonable outlay, is by means of filters erected at the pumping stations on the

Schuylkill and Delaware Rivers. The plans for obtaining a supply from the upper Delaware, from the Tohickon, the Perkiomen, and the upper Lehigh, proceed upon the assumption that these water supplies are necessarily pure and can be kept so. This assumption is utterly false; it is not borne out by the facts. Moreover, the expense of obtaining a supply from these sources, involving, as it does, the claims of certain syndicates which control water rights, and the building of immensely long conduits, would be enormous. In case the city determines to supply filtered water, the New York Filter Company has guaranteed to run a filter plant at the Belmont pumping station with a capacity adequate to filter twenty million gallons of Schuylkill water per diem. Moreover, in case the number of bacteria at any time during the course of trial of a year's duration exceeds 100 per c.c., the company forfeits the payments of the contract price, amounting to nearly a quarter of a million of dollars, and obligates itself to remove the plant without charge of any kind to the city.

As chemist of the Philadelphia Water Department for a number of years, and knowing the effect on the Schuylkill River of the sewage of Manayunk, Conshohocken, Norristown, Phœnixville, and a population of 300,000 people located in the drainage area above these manufacturing towns, I can assure my readers that in guaranteeing to cut down the bacteria to a lesser number than that found by Wolfhügel in the Berlin filtered waters, this company has undertaken to achieve a most important result, and that, too, on a stupendous scale. Dr. Chapin, the health officer of Providence, R. I., has found, however, that this result, and a still more perfect one, is constantly attained in practice. A similar filter plant delivering two million gallons per diem, at Long Branch, N. J., supplies water containing, not 100, but only 2 to 5 colonies of bacteria per c.c. This is by the use of a filter which is washed thoroughly twice in every twenty-four hours. The bacteria, by the use of aluminic sulphate, are entangled in a magma of aluminic hydroxide, and filtered out along with the precipitated coloring matters, clay, etc.

I have analyzed the waters of Long Branch before and after filtration, with the following results, which are stated in parts per 100,000:

	Before filtration.	After filtration.
Free ammonia	0.132	0.0035
Albuminoid ammonia	0.0445	0.0095
Oxygen required to oxidize organic matters	1.232	0.1785
Nitrous acid	0.0025	0.0015
Nitric acid	0.087	0 087
Chlorine	0.35	0.35
Total hardness	2.25	2.25
Permanent hardness	0.00	1.00
Temporary hardness	2.25	1.25
Total solids	9.52	7.14
Mineral matters	5.28	5.40
Organic and volatile matters	4.24	1.74



In other words, the free ammonia was diminished to the one-thirty-third part of its original amount; the albuminoid ammonia to one-fifth, and the oxidizable organic matter to the one-seventh. To bring about this marvellous purification sixty-five one-hundredths of a grain of alum to the gallon was used. The alumina acting as a coagulating material had been so perfectly removed along with the dirt, bacteria, and coloring matter that it was practically absent in the filtered water; if present at all it could only be recognized by the application of the most delicate chemical tests. It is interesting to know what was the original source and nature of the water-supply of Long Branch. It comes from a peat bog located in a cypress swamp about four miles west of that watering-place. It had, on my color scale, July 8, 1892, seven degrees of color, and appeared like an infusion of coffee. And while it had a bitter, peaty taste, the filtered water was perfectly colorless, without odor, and pleasant to the taste.

The almost complete removal of bacteria effected by these filters is in one sense a misfortune. Bacteria are Nature's physicians, constantly busying themselves in seeing that the decomposing and worn-out particles, which would otherwise clog the machinery of Nature, are gotten out of the way and resolved into their simple and harmless elements. They are universally present: in the air, in the earth, and in the waters under the earth. They dwell with the trout in the waters of the purest mountain torrent and are found at the bottom of the coldest and deepest well. As to the moss-grown bucket, the oaken-bound bucket, its moss and oaken chinks and crannies are for bacteria a paradise. Frequently in a sample of milk, when fresh, I have found many hundreds to the teaspoonful, while in the course of a few hours their number has increased to millions. With their aid it is possible to make good cheese, and each one of its peculiar and delicious flavors, from the pianissimo of cottage cheese and Brie, through the crescendo of Stilton, Gorgonzola, and Roquefort, and up to the fortissimo of the indescribable Limburger käse, is due to its particular and peculiar flavor-developing bacteria. The choicest gilt-edged Darlington butter owes its aroma and dainty taste to cream ripened by bacteria under choice and dainty conditions.

The human mouth, stomach, and intestines contain bacteria in immense numbers and variety. Recently I counted the bacteria in my own saliva six hours after eating. There were 10,775 colonies per cubic centimeter. If we assume that a litre is secreted daily and that it contains the same average number, we should have the enormous aggregate of over ten million bacteria. Some of the bacteria of the alimentary tract have a peptonizing action, converting the proteids of the food into peptones; others are diastatic, splitting cane-sugar into dextrose and lævulose. Some have a reducing action, breaking down albumin into the products of fermentation and putrefactive decay, with the evolution of

hydrosulphuric acid, ammonia, etc. These are more especially active and abundant in disordered conditions of digestion. The reducing action of other varieties is exerted upon the fermentable sugars of the food, decomposing them into lactic and carbonic acids. I have never examined the saliva without detecting the presence of nitrous acid due to the reduction of nitrates by the bacteria. At the same time that the counting of the bacteria above alluded to was made, I found my saliva contained 0.4 milligramme of nitrous acid in 100 cubic centimeters. Considering, then, the peptonizing, soluble-making, reducing actions of these alimentary bacteria, is it not eminently probable that they are intimately concerned in, if not essential to, the processes of digestion?

Unfortunately, among the countless multitudes and species of bacteria, which are the gardeners *par excellence* in the garden of Nature, working ever toward making it sweet and pure for man's indwelling, there are some which are too vigorous and hasty in their action for our immediate safety and comfort. These are the pathogenic, the toxic, the morbific genera, which tend to sweep away or extirpate any poorly nurtured, non-resistant, or diseased organism that comes in their way. Yet they are as abnormal, so to speak, as is disease itself. A thousand samples of milk taken at random will probably not show a single pathogenic bacterium. A thousand springs, wells, and watercourses might readily be found in our vicinity of which the same can be said. But inasmuch as the bacillus of typhoid and tuberculosis has been found in diseased cow's milk, the unfortunate recommendation was made to physicians some years since to sterilize all milk by long-continued heating to the boiling-point. The fad quickly became as universal as it was short-lived. It took on its acutest phase some two years ago, but to-day sterilized milk is no longer manufactured for sale in New York. The malnutrition and deaths due to feeding sterilized (*i. e.*, by continued heating to 212° F.) milk to infants have a hundred-fold exceeded in number the cases of tuberculosis, scarlet fever, or other zymotic disease resulting from the bacilli of these diseases in ordinary good country milk. Pasteurized milk, which leaves the constituents of the milk in their natural condition, has taken the place of this tortured, over-cooked milk, in which scarcely a single element is left in its proper and digestible state. While the pasteurization of milk, or its heating for ten to thirty minutes at a temperature of 160° F., does not certainly destroy every germ, it reduces the probability of their presence to a minimum.

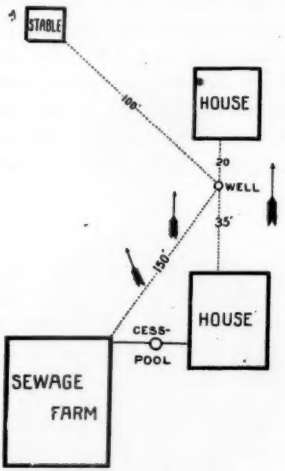
So with regard to water. By long-continued heating it can be rendered absolutely germ-free. The same result can be effected by filtration, provided the filtering medium is fine-grained enough and the rate of filtration is sufficiently slow. But with the materials and the methods essential to an economical supply of the immense quantities of water required by our great cities, no process of filtration ever has made, or

in the nature of things can make, the filtered water absolutely germ-free or sterile. And even if it could, sterilized water is an artificial commodity of very questionable value. Experience has shown that such water, unless carefully kept in reservoirs as far as possible out of contact with light, heat, and air, spoils very rapidly. As soon as the spores, ever floating in the atmosphere, fall into it, they develop in the presence of warmth and sunlight with great rapidity, and the water so fertilized becomes filled with microscopic organisms, algæ, etc. These, in their decay and by the production of foul tastes and odors, render the water unfit for domestic use. The reduction of the bacteria as far as can be practically accomplished by filtration, and not to the point of absolute sterility, is all that is necessary or desirable in an engineering plant designed to supply the water for the multifarious uses of a great city. This, indeed, is the system which has proven eminently satisfactory during the past thirty years for the supply of the five and a half millions of inhabitants of London. This city has 44 subsiding reservoirs, covering an area of 465 acres, and an available capacity of 1,300,000,000 gallons. It has also 100 acres of filters, delivering 160,000,000 gallons daily of filtered water. No epidemic of cholera, such as repeatedly devastated London prior to the installation of its filter system, has occurred since the seven London water-companies were compelled in 1852, by Act of Parliament, to filter their water. In the fifty years prior to the passage of this act there had been four great epidemics, and they had all been traced by such overwhelming evidence to the drinking of unfiltered water that the compulsory installation of the filters had resulted in consequence. To-day the death-rate of London is lower than that of most cities, and the percentage of typhoid fever is correspondingly low.

Having arrived at this conclusion, I wish to return to the question of ethics in relation to the significance of bacteria in water, which was the primary reason that induced me to write this somewhat lengthy article.

What did my duty and a sense of moral obligation to the gentleman who had been at the expense of having his well-water examined require that I should do in face of such chemical and biological data as the analyses revealed? It would not answer to report that the evidence as to purity or the reverse was conflicting in its nature, and as long as there was a doubt prudence demanded that he should not use the well, and that he should seek his supply of water from another source. A physician knows by hard experience that whatever may be his doubts as to the diagnosis, he must prescribe a course of action and treatment. It might be truly answered: Your duty was to confirm your diagnosis by every means in your power. Make culture experiments upon the separate colonies of bacteria until you were absolutely certain whether

any pathogenic forms were present or not. My reply to this would be that such a search is a long, intricate, and difficult investigation, ending finally by establishing the probability of the absence of such forms, and not by arriving at an absolute certainty. Moreover, the expense and labor vastly exceeds the moderate fee which a client is willing to pay for a water analysis, and a charge commensurate for such an exhaustive investigation would be regarded as an extortion. I sent, therefore, for the engineer who had submitted the water, and requested him to acquaint me with the facts in the case and the location of the well in relation to cesspools and other possible sources of pollution. By reference to the accompanying diagram, the facts which he made known will become easily intelligible.



The well is located on the slope of a hill, and 20 feet and 100 feet, respectively, from a house and stable located farther down the slope. Above it are a house and a sub-surface irrigation field at distances of 35 feet and 150 feet, respectively. Between the house and the field is a cesspool, stated to be cemented perfectly tight, and used to carry the house sewage by an intermittent flushing action upon the small sewage farm. This farm has an area of 100 square feet, with a sub-surface small drain-pipe system, the drains being 4 feet apart, and disposing of 1000 gallons of house sewage daily.

These facts revealed by the engineer were strikingly in accord with the analytical data. By oxidation and nitrification the ammonia and nitrogenous matters in the house excreta were converted in the sewage

farm into immense amounts of nitric and carbonic acids. The work was being very perfectly performed, as was shown by the very small amount of free ammonia and the mere trace of nitrous acid. The presence of so large a number of nitrifying bacteria was simply a guarantee that their work of destroying the dangerous matters in the sewage was being very conscientiously and thoroughly performed. Had they been absent, the original sewage would have appeared in the well. Moreover, it is well established that the bacillus typhosus and other pathogenic germs are themselves the food of the saprophytic varieties.

Having assured myself by these considerations that the water in the well was not dangerous, I drank it myself freely during a period of two weeks, and then gave the owner a certificate, stating that the water had proven safe and wholesome. At the same time I advised the examination during the cold weather to see whether the nitrifying bacteria were certainly doing their work during the winter months as thoroughly as in the warmer seasons of the year. Finally, as the water is not to be reservoired, but used for domestic purposes directly, I shall advise its filtration in order that the bacteria, which may be considered as having performed their work, shall be gotten rid of as far as practicable, on the ground of making assurance doubly sure, and on the ground of their superfluity.

TWO CASES OF AKROMEGALY, WITH REMARKS ON THE PATHOLOGY OF THE AFFECTION.[1]

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Inasmuch as the subject of akromegaly is attracting such widespread attention, a report of additional cases, especially if they present unusual features, cannot fail to be of interest; and further, while the disease is rare, it is probably more common, as these cases would seem to show, than is generally supposed. As a rule, only those cases come under observation which apply to physicians for the relief of some painful or distressing symptom. On the other hand, it is extremely probable that others, if not indeed the larger number, pass through life without the knowledge that they are the victims of a mysterious disease, realizing only that Nature has made them big of limb and feature and unpleasant to look upon.

Neither of the cases about to be described presented himself as a patient. Neither had had any occasion for medical advice since child-

[1] Read before the Meeting of the American Neurological Association, New York, June, 1892.

hood. Both were discovered by accident, one on the street, the other in his workshop. Both proved willing subjects for study. It seemed to be a source of satisfaction to them to learn that their peculiar appearance was not a thing normal to them, but the result of a disease, and this may, after all, have been a very natural feeling.

CASE I.—J. T. M., aged fifty-six years; married; a cutler by occupation, and a native of American parentage.

Family history: His father died at sixty-seven years, of heart disease; his mother, at seventy, of some affection which he does not remember. He had in all, five brothers and two sisters. Of these, two brothers died in childhood, while a third appears to be in delicate health. The others, inclusive of the two sisters, appear to be well. He himself has a son of twenty-two and a daughter of thirteen, neither of whom present anything abnormal. He is further very positive in his assertion that no one of his relatives were ever affected as he is, and that they were all people of average size.

FIG. 1.

J. T. M., aged twenty-seven years.

Personal history: As a child he had measles, scarlet fever, and whooping-cough, but since that time he has had no illness of moment. However, he used to take cold rather easily, and has occasionally had rheumatic pains. Nothing further could be elicited until finally he admitted that in former years he had suffered very much from emotional depression. He dated the origin of this trouble from his eighth year, when, upon one occasion, he had been very severely whipped for a fault

of which he had been entirely innocent. He appears to have been an unusually sensitive child, for the unjust punishment to which he had been subjected made, in spite of all attempts at reparation by his parents, an indelible impression upon him. To use his own words, he "fell into darkness and worry," and as he grew older "the darkness and worry grew with him." When twelve to fifteen years of age his depression deepened at times so much as to resemble melancholia. He used to be "so sad and heavy-hearted" that he could not sleep, and lay awake at night "worrying about things that he ought not to have done." This mental state persisted off and on, though in a lessened degree, throughout youth and adult life, up to some fifteen years ago. Since then he has felt quite at ease and even cheerful.

FIG. 2.

J. T. M., aged fifty-six years.

When a young man he appears to have been quite slender and slight in build, as the accompanying photograph (Fig. 1), taken when he was twenty-seven years of age, seems to show. He did not notice any marked increase of any part of his body until about middle age. Indeed, the onset of his symptoms was so gradual that he cannot fix the time when it began, but he remembers very distinctly that it was only ten or twelve years ago that he realized that the size of his hands was very great. Since that time they have continued to grow larger. He has suffered neither from alcoholism nor syphilis.

Present condition: As seen by the accompanying photograph (Fig. 2), the face and hands are excessively large. In the face the features show marked increase in size as compared with Fig. 1. The supra-orbital ridges, the nose, the malar bones, the chin, and even the ears are striking evidences of this. The mouth, too, looks like an enormous transverse slit, while the tongue when protruded is so large that when thrust downward the patient can almost cover with it the hypertrophied chin, and when thrust upward fully the lower third of the nose. An examination of the mouth reveals that he has lost many of his teeth, and further, that the lower jaw projects far in advance of the upper. The face and mucous membranes are rather pale.

The hands are excessively broad and flat, and the fingers look blunt and stumpy, while the natural furrows of the parts are much exaggerated. The nails are broad, flat, and short, and broken off at the ends as though brittle. They also present in varying degree a fine longitudinal striation. The wrists do not seem to be enlarged in proportion to the hands. The feet, however, show an increase in size corresponding to that of the hands. They are also excessively broad and flat, while the nails are similar to those of the hands in appearance.

The following measurements were made:

	Right. Inches.	Left. Inches.
Length of hand from wrist to tip of middle finger	8½	8½
Circumference of hand at knuckles	10	10¼
" metacarpus, including thumb	12	11¾
" forefinger, proximal phalanx	3⅝	3⅝
" wrist	8½	8⅝
" forearm, junction of upper and middle third	11⅞	12
" arm	13⅝	13⅜
Length of foot, heel to tip of great toe	11⅛	11¼
Circumference of foot at ball of great toe	11	10¾
" " instep	11¾	10½
" " across instep and heel	14¾	15¼
" ankle	9¼	9⅛
" leg, junction of middle and upper third	15⅞	15⅝
" thigh, junction of middle and upper third	22¾	22¾

	Inches.
Length of nose, root to tip	2⅜
From zygoma to zygoma	5
Depth of chin	2¼
Circumference of neck	15⅝
" chest, at nipples, expiration	43½
" " " inspiration	45
" abdomen	44

From these measurements it is evident that the face, hands, and feet are decidedly enlarged. As regards the arms and legs, the figures do not permit us to predicate any increase in size. It is very probable, however, that as regards the chest some increase has taken place. This is evidenced, not so much by the figures, as by the appearance of the costal cartilages and sternum, which are much hypertrophied.

As regards the length of the feet, which is excessive, it should be stated that it is mainly due to a marked increase in the tissue over the

calcaneum, if not indeed to an increase of the calcaneum itself. The appearance is very striking, and is more marked than in the heel of the negro, which it forcibly recalls.

In addition, the thyroid gland is much enlarged, as are also both testes, especially the right, which is enormous, and recalls the corresponding organ in the sheep. The penis does not seem to have shared in the increase.

Dulness over and adjacent to the sternum, such as has been noted by Erb, and which is supposed to be indicative of persistence and enlargement of the thymus gland, was not present.

The patient suffers from general weakness. He is easily fatigued. There is, however, nowhere any local palsy, nor is there anywhere any loss or modification of cutaneous sensibility. The grip is diminished and the knee-jerks are sluggish and lessened.

Stoops slightly, but there is no kyphosis.

Examination of the eyes is negative, with the exception that in the left eye the field is somewhat contracted in its temporal half. Smell is decidedly obtunded. Taste is apparently well preserved. Hearing appears to be normal.

The urine has a specific gravity of 1026, and is negative to all tests.

When questioned, the patient states that he rarely has headache; that he has an excessive appetite, and that he frequently eats "more than is good for him"; also that he is always thirsty, that he drinks about a quart of water with each meal, and a great deal between; further, that he is very apt to fall asleep in the daytime, especially if he sits down, and that he will even fall asleep while people are talking to him. Thinks that his memory is impaired.

Further, he sweats a great deal, especially about the head and neck. He has but one symptom, however, which distresses him, and that is, that whenever he exerts himself a little his heart palpitates.

Sexual power is also much diminished, though in estimating the value of this symptom the patient's age must be taken into account.

CASE II.—G. W. S., aged thirty-six years; married; an employé of the fire department; American.

Family history: This is practically negative. His father was killed by an accident when forty years of age. His mother is living and well. Has one brother and one sister, both of whom are also well. All his people, he states, were of average build, though his mother and an aunt on the mother's side incline to obesity. He has a son of thirteen who is in every way normal.

Personal history: He had none of the illnesses of childhood, but when two and a half years old lost the sight of his left eye by a fall from a sled. His mother states that he had a convulsion as a result of this fall and that he was ill for some weeks. However, he made a good recovery and has had no illness of moment since that time.

According to a photograph taken when the patient was twenty-one years of age (see Fig. 3), he seems to have been a tall young man with perhaps ordinary features. The chin, however, seems already a trifle pronounced. The hands too, though large, are not markedly so, while the fingers are long and even slender. The patient himself thinks that it was at this age or shortly after that he first noticed that his hands were getting bigger. Later on he began to get larger in face, hands, feet, and body—he seemed, as he expressed it, to get bigger all over.

The process must, however, have been very gradual, for a photograph taken when he was twenty-eight, shows less change than might have been expected. However, the nose and chin had already become very large and very pronounced. The cheek bones too, from having been rather flat, had become more prominent.

The patient stated that he had increased steadily in weight, and that when thirty years of age he weighed two hundred pounds.

No alcoholic or venereal history.

Present condition: His features are so very large as to attract immediate attention, while his hands and feet are truly enormous. On stripping him we find that this enlargement is not by any means limited to these parts, but is shared by the body as a whole.

FIG. 3.

G. W. S., aged twenty-one years.

Studying his face (see Fig. 4), we find that his supra-orbital regions are occupied by huge, bony prominences; that the cheek bones are so excessively hypertrophied as to give a knobbed and angular appearance to the cheek; that the lower jaw is positively massive; and that the nose, though well-shaped, is very large. Due to the elongation of the face and the excessive prominence of the malar bones, deep depressions have formed to either side of the nose, and these, together with the distorted features, give the countenance an almost hideous aspect.

The tongue is much hypertrophied. The lower jaw projects far beyond the upper, so that the teeth do not meet. Some of the molars have been lost.

The ears also are very large.

On looking at the back of the head we find that the external occipital

protuberance, the inion, has become so hypertrophied that it forms a massive conical projection more than an inch above the general surface of the skull. The face and mucous membranes are perhaps a trifle pale, but less so than in Case I.

Turning our attention now to the hands, we find that they are excessively broad, thick, and spade-like, while the fingers seem rounded and stumpy. As in Case I., the normal transverse furrows are much exaggerated. The nails also are broad, flat, and striated. The feet closely resemble the hands in the essential features.

FIG. 4.

G. W. S., aged thirty-six years.

Unlike Case I., the hypertrophy is not limited to the extremities, but affects apparently the limbs and trunk in their entirety. A glance at Fig. 4 reveals undoubted hypertrophy of the arms and chest, and this is also true of the lower portion of the trunk and legs. The increase in size appears to affect bone and muscle alike. The hypertrophy of the muscles is, indeed, very striking. The muscles, however, seem soft rather than firm, and although the patient asserts that he is very strong, the dynamometer registers but 72 in the right hand and 74 in the left.

The following are the measurements that were taken:

	Right. Inches.	Left. Inches.
Length of hand	8¼	8¼
Circumference of hand at knuckles	10¼	10½
" metacarpus with thumb	13	13
" forefinger, proximal phalanx	4	4
" wrist	8¾	8¾
" forearm at junction of upper and middle third	13⅜	13½
" arm	15	15½
Length of foot, heel to tip of great toe	11	10¾
Circumference of foot at ball of great toe	11½	11¾
" foot at instep	12¼	12½
" foot across instep and heel	15	15
" ankle	10	10
" leg at junction of upper and middle third	17¼	17⅛
" thigh at junction of upper and middle third	23	23⅛

	Inches.
Length of nose (root to tip)	2¾
From zygoma to zygoma	5½
Depth of chin	2½
Circumference of neck	17
Distance between acromions measured over back	17
Circumference of chest, at nipples, expiration	44
" " " inspiration	47½
" " at xyphoid cartilage, expiration	43½
" " " " inspiration	47½
" abdomen	41½

A comparison of these figures with those of Case I. reveals a notable difference as regards the forearms and legs. These are much larger in Case II. As regards the foot, the same holds good as in Case I. There is a similar formation of tissue at the back of the calcaneum and the same appearance of a negro's heel. It is, however, less pronounced than in Case I.

There is present here no sense of general weakness. Indeed, the patient, deceived by his hypertrophied muscles, believes himself to be very strong. As in Case I., there is no alteration in cutaneous sensibility. The knee-jerks are decidedly minus.

An examination of the eyes by Dr. de Schweinitz revealed the left eye to be sightless, vision having been destroyed by ophthalmia in childhood. The field of vision of the right eye, both for form and color, is exactly normal, presenting the full physiological limits. With the exception of some anæmia of the nerve-head, which is probably dependent upon some general anæmia, examination of the right eye is negative.

The other special senses likewise present nothing abnormal.

The urine has a specific gravity of 1020, and, as in Case I., is negative to all tests.

The patient never suffers from headache. Occasionally, however, has some tinnitus, but which is present only at times. No mental depression or other mental symptoms. Sleeps, however, a great deal. Is very often drowsy during the day. Sweats excessively, especially about the head. Appetite and thirst both very great. Is sexually inactive; not living with his wife.

Weight at present two hundred and fifty-five pounds. Very little of this weight is made up of fatty tissue.

There is no kyphosis.

The above cases are interesting because of the manner in which they were found, and because of the absence of headache and of decided eye-symptoms. Regarding headache, upon which Souza-Leite lays so much stress, I find it mentioned in only a limited number of cases, certainly not in all. The general invasion of the limbs and trunk by the hypertrophy in Case II. must also be looked upon as significant.

In the study of any obscure disease there is always danger of ascribing to facts which bear the relation of mere concomitance, a relation of cause and effect. Pierre Marie, to whom belongs the great credit of having isolated akromegaly and of having defined its position as a clinical entity, has advanced the view that the affection is due to disease of the pituitary body, just as myxœdema is due to disease of the thyroid gland. It is true that he has not presented this view as though absolutely established by the evidence, but rather as a very probable hypothesis. I believe, however, that the facts at hand are more in favor of its rejection than of its acceptance. It is undoubtedly true that in the larger number of autopsies thus far held the pituitary body has been found enlarged, but if such enlargement really be the cause of akromegaly, it should be found in every instance—it should be universal. In a number of cases, however, it has not been recorded, and in several in which it has been carefully looked for, notably the case of Virchow,[1] the pituitary body has been found absolutely normal. Again, observations are not wanting to prove that the pituitary body may be enlarged without the concomitance of akromegaly, as, for instance, in the case recently reported by Packard.[2] Further, it appears that the pituitary body may be absolutely destroyed and yet no symptoms of akromegaly appear. Weir Mitchell[3] some years since reported a very remarkable case (in which I myself studied the specimens) in which an aneurism had formed in an anomalous branch of the circle of Willis. In addition to destroying the optic chiasm it had hollowed out the entire cavity of the sella Turcica, eroding its surface and boundaries. From the notes of the autopsy the aneurism occupied the cavity of the sella Turcica to the exclusion of everything else. Here, then, we have an instance in which Nature has performed a vivisection experiment, and has destroyed the pituitary body without producing the symptoms of akro-

[1] Virchow, Berliner klin. Wochenschrift, 1889, xxvi. p. 81.

[2] F. A. Packard: The American Journal of the Medical Sciences, June, 1892, p. 657, third case.

[3] S. Weir Mitchell: Journal of Nervous and Mental Diseases, January, 1889. "Aneurism of an Anomalous Artery causing Antero-posterior Division of the Chiasm of the Optic Nerves and producing Bitemporal Hemianopsia."

megaly. Had they been present it is safe to assume, from the reputation of the observer, that they would have been recorded.

When we consider the clinical records and autopsies of akromegaly still further, we find that there is hardly a gland in the body which has not at some time or other been reported as enlarged: the pituitary body, the thyroid gland, the thymus, the lymphatic glands, the spleen, the kidneys, the lobes of the liver, and the testicles. Certainly with these facts before us we should hesitate to ascribe the affection to disease of any one of them, even if, as in the case of the pituitary body, its hypertrophy is quite frequent. It would be safer to ascribe to the hypertrophy of this body merely the same value as that which must be assigned to the hypertrophy of the other glands, namely, a participation in some obscure and general morbid process. Finally, when we recall such post-mortem findings as hypertrophy of the sympathetic system and peri- and endo-neuritis, a legitimate doubt is raised as to any active part whatever being played by the glandular apparatus.

FIXATION AFTER EXCISION OF THE KNEE.

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A patient with tubercular ostitis of condyles of the right femur, with sinuses extending up the thigh, posterior displacement of tibia, and flexion, was confined in bed for a year. Excision of the necrosed condyles and of the sinuses leading thereto was performed, with removal of about one and one-half inches of femur and tibia. Three strong chromicized catgut sutures were employed to maintain an accurate coaptation, and a plaster-of-Paris splint, embracing entire leg, foot, thigh, and pelvis, was kept on for five weeks. When the fixed apparatus was removed the leg was perfectly straight, the wounds all perfectly healed, and there was apparently firm bony union. The patient was permitted to get up and go about on crutches without use of the affected leg, upon which a light rigid posterior apparatus of plaster-of-Paris was applied. Three months after the operation, the appearance of the knee being unchanged, she passed from my observation as cured, with firm bony union in a straight position. A year later I again saw the patient and learned that shortly after my last visit, *i. e.*, five months after the excision, she had commenced to gradually use her right leg in walking with her crutches, and about four weeks later, or six months after operation, had discontinued the use of crutches altogether, all of which was contrary to my instructions. Upon examination, I found that the tibia had become displaced posteriorly, as shown in Fig. 1, and decided eversion of the foot

and leg had taken place by rotation of the tibia, as shown in Fig. 2, but there was no flexion. The shortening was two inches. The patient declined further operative procedure in the hope that some form of mechanical apparatus would enable her to walk without fear of increasing deformity. Just here it will be of value to give brief notes of four cases that have direct bearing upon the one just read in showing the time at which patients have been able to walk.

Fig. 1.

Fig. 2.

Swain speaks of a case of excision that ten months after operation sustained a fracture of femur two inches above excised knee. (Swain: *Diseases and Injuries of Knee-joint*, p. 102.)

Ashhurst, in *Encyclopædia of Surgery*, speaks of a case, aged eighteen years, who walked with crutches one year after operation without any support to resected limb. There was still slight flexion and extension at knee, but no lateral motion. Patient fell and fractured fibula of resected leg without injury to knee. Two months later, walked with a single crutch. One month more, walked readily with cane and sometimes not that support.

Ashhurst also refers to a case in which two weeks after operation bony union had begun. In two months, splint was replaced by a pasteboard gutter and patient was allowed to sit up. Five months after the operation the patient walked unaided, supported by soap plaster and bandage. And another, who five months after operation, walked without crutch, cane, or assistance. There was firm union at a slight angle.

Upon looking up the subject in text-books on surgery, I found great diversity of opinion as to the necessity for the use of internal fixation,

the method of operating, the kind of external appliance to be used, and the length of time in which immobility should be maintained. The Jacksonian prize essay on "Injuries and Diseases of the Knee-joint," by William Paul Swain, published in 1869, gives in an appendix the brief notes of one hundred and four cases of excision of the knee for various conditions and by various operators. They were all treated without internal fixation, dependence being placed upon external fixation by an apparatus something like the Thomas splint. The notes do not always accurately state the ultimate position of the leg, but apparently have reference more to the comparative mortality of excision and amputation. The following table was extracted therefrom in the effort to show the results obtained by the use only of external methods of fixation, which were employed for periods generally of two, three, four, and eight months after operation.

	Cases.
Firm straight union was obtained in	21
Fibrous or cartilaginous union	6
Serviceable limb	5
Good union	14
Fair amount of union	1
Subsequent flexion occurred in	4
Posterior displacement of tibia	2
Ultimate position or condition of leg not definitely stated	15
No union	9
Death not always associated with operation	19
Reëxcision on account of flexion	4
Reëxcision for return of disease	3
Amputation on account of there being no union	3
Amputation for return of disease	5

A more or less serviceable leg was obtained in 37 cases out of 104.

J. D. Bryant reports 10 cases in which good bony union was obtained in 1 case in two months; 2 cases in three months; 2 cases in four months; 1 case in seven months; slight flexion was present after four months in 2 cases; slight motion existed three months after operation in 1 case; 1 case died of Bright's disease on thirteenth day. (J. D. Bryant: *Trans. Am. Ortho. Assoc.*, 1891, p. 314.)

Hoffa found 14 cases of slight flexion and 30 cases of severe flexion in a total of 130 cases of excision of the knee. (*Arch. f. klin. Chir.*, 1885, iv. 32.)

Dr. Phelps reports 8 cases in which the results are here given: One case was wired, but flexor tendons were not cut; result, leg flexed. One case, reëxcision of the above; result, firm straight leg. One case cut hamstring tendons; result, firm straight. One case, four months after, firm straight. One case, nailed and wired, cut hamstrings; result, firm straight. One case, nailed and wired, cut hamstrings; result, firm

straight in seven weeks. One death from ether. (A. M. Phelps: *Med. Record*, July 31, 1886.)

In 36 cases collected from various sources by Dr. A. M. Phelps (*Med. Record*, July 31, 1886), the results were as follows: Bony union seven weeks later, 1; bony union where the treatment was continued for 180 days, 1; fibrous union eight weeks after operation, 1; good, 2; good one year later, 1; firm union, 1; patient walked six miles, not stated how soon after operation, 1; useful limb, 5; cured, 1; walked well three months later, 1; one year later firm union, walked with ease, sixteen months after excision flexion to right angle (Morgan: *Brit. Med. Journ.*, July, 1879, p. 317); indefinite, 4; not stated, 4; recurrence, 1; no union, amputation, 1; subsequent relapse, amputation, 2; amputation, abscess cavity, 1; amputation for condition not stated, 1; no union, 4; death, tubercular miningitis, 1; death, shock, 1.

Roberts (*Modern Surgery*, p. 524) says: "Patients can walk in eight to ten weeks. No brace is required unless bony ankylosis does not occur." The difficulty of being sure that bony ankylosis has been obtained is so great that it would appear to be advisable to obtain, if possible, a greater assurance that the case will not relapse.

Note Morgan's case (*Brit. Med. Journ.*, July, 1879, p. 317) where, one year after excision the union was firm and the patient walked with ease, but four months later the leg became flexed to a right angle.

J. C. Schapps (*Brooklyn Med. Journ.*, July, 1892, vol. vi. p. 65) reports a case in which Wyeth's drills were used and a posterior steel splint. Splint was removed at end of four weeks. Two to three weeks later union was apparently firm. Eighteen months after the operation the limb was very much flexed, but there was no motion. Osteoclasis was done and plaster-of-Paris splint used for ten months. Thirteen months after osteoclasis and two and a half years after excision, patient was doing well.

Another case of a boy that left the hospital four months after excision, through error discontinued use of splint. Sixteen months after excision, leg was flexed a great deal. Osteoclasis and plaster-of-Paris were resorted to. Seven and one-half months after osteoclasis, or one and one-half years after excision, the leg was again flexed as greatly as before. Steel brace applied for eight months. Two years after excision the limb was reported firm, with flexion. (J. C. Schapps: *Brooklyn Med. Journ.*, July, 1892, vol. vi. p. 65.)

Gerster (Gerster, *Surgery*, ed. 1888, p. 287) records a case in which two nails were used, which were withdrawn on the twelfth day. Eight months after the operation the patient is said to have recovered.

Ashhurst (*Encyclopædia of Surgery*) records a case in which there was firm union nine and one-half months after excision. Two weeks later, with a splint on, walked readily with crutches. Two and one-half months

later both splint and crutches were dispensed with. Seven years later, or eight years after excision, the limb was contracted at a right angle and immovable. The contraction had been coming on for two years.

Moullin says: "Union is fairly sound in a successful case at the end of six weeks, and the patient may then be allowed to get about on crutches, the limb being protected with a poroplastic casing or with Thomas's knee-splint. Some appliance of this kind must be worn for several years; in the case of children until the period of youth has ceased." (Moullin: *Treatise on Surgery*, p. 595.)

Later, even after years have passed, the osseous union sometimes yields and causes serious deformity. (Moullin, p. 595.)

Treves says: "The after-treatment is of the most importance, is tedious, and often surrounded with difficulties. There is a tendency to displacement, and notably to a displacement of the tibia backward." (Treves: *Manual of Operative Surgery*, vol. i. p. 692.)

"The limb must be kept upon the splint until it is sound. This period will vary from six weeks to three months. Complete recovery can usually not be expected until six months have elapsed." (Treves, p. 693.)

After the splint has been removed, a light leather support, strengthened with a strip of steel at the back, should be applied; and in the case of children, Mr. Jacobson advises that such a support be worn for three or more years. (Treves, p. 693.)

Erichsen says: "The result of the operation will mainly depend on the care taken in the after-treatment." (Erichsen's *Surgery*, vol. ii. p. 270.)

Swain remarks: "Throughout, one great object must be kept steadily in view, viz., *the perfect immobility of the limb*. At the end of one month to six weeks, retentive apparatus should be removed, and the limb placed in some other support."

The results obtained by the employment of external methods of fixation, as given in Swain's table of 104 cases, would appear to clearly indicate the necessity for the employment of internal fixation, in connection with efficient splints, that perfect coaptation may be obtained and maintained with less dependence upon the volition of the patient. The problem is, therefore: Which of the many methods employed offers the greatest assurance of permanent coaptation and prevention of relapse?

There is abundant evidence that in many cases, notably those in which there was tubercular ostitis, primary bony union is rarely obtained until after months or years have elapsed, and often when it has apparently been accomplished, it yields, resulting in subsequent deformity. This would clearly indicate that temporary methods of fixation are inadequate and tend to the abandonment of catgut, or even chromicized catgut, which can exert restraining force for a comparatively short time only. Steel nails are of doubtful efficiency because of the short time in

which they are employed. They are usually removed at, or about, the fourth week, and are generally found to be loose and therefore easily removed. These facts show that they could not have exerted any force. The same statement would apply to screws, gimlets, drills, dowels, or other methods which were removed during the course of the first treatment.

Gerster (*Surgery*, ed. 1888, p. 287) reports a case where five nails were used. On the third day the dressings were changed, and four nails were found to be loose and were therefore withdrawn. Two and one-half months later the last nail was withdrawn. Four months after the operation, patient walked without crutches or stick, but used a silicate of soda splint. The union was not perfect.

In four cases in which I have used steel nails, three inches long, I have found that there was absolutely no resistance to their easy removal, and that they were simply loosely imbedded, principally in the cancellous structure. In experiments upon a cadaver I found that nails, screws, or dowels did not prevent motion, but upon lifting the leg by the thigh the weight of the leg produced a great separation. Rotation of the leg broke loose the attempted fixation, and they appeared to be perfectly useless without efficient external support, and the employment of the latter only, appeared to be just as efficacious. In the same cadaver I employed stout wire at four points, through holes drilled in the compact structure, and found that the objectionable movements were entirely absent, although great force was exerted.

If the wire suture is efficiently used, it would appear to be the method promising the best ultimate results, but its success depends upon its long-continued use. I cannot agree with Treves, that primary union is apt to be hindered by the use of metallic sutures, and that their presence excites carious action. I have seen cases where the wire sutures were *in situ* two years after an excision, and Bryant (THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1892, vol. ciii. p. 116) says that he has not removed the wires in any case, unless trouble was caused by them, and this rarely occurred.

The accurate approximation of the tibia and femur, secured by metallic sutures, naturally permits of less dependence being placed upon the external fixation apparatus, but should not tend to its disuse.

Methods of operating with the view of more accurate fixation are numerous, and those most in use are Volkmann's, Fenwick's, and Neuber's. The patella plays an important part in Volkmann's and Neuber's methods, by its union to the tibia and femur acting like a splice, and where the patella is sound, its use is of advantage. Fenwick's method of dovetailing the femur and tibia by curvilinear incisions is more difficult of execution than straight incisions, and has a tendency to leave pockets between the sawed surfaces. It affords an effectual bar against

either rotation or posterior displacement of the tibia, but will not prevent flexion. Phelps resorts to Fenwick's method, supplemented by section of flexor muscles, and his table of eight cases already quoted shows recovery with firm straight legs, but I have not been able to learn as to the length of time after operation that the cases were recorded.

The use of the patella is urged and discouraged by equally good authorities.

Treves says: "With regard to the patella, no good can result from its retention. If partially diseased, and the morbid parts be removed, there is still a fear of the mischief reappearing and extending. If apparently sound at the time of the operation, it may, if left, become attacked by destructive inflammation during the healing process.

"The retention of the bone and of the patellar ligament does not assist in retaining the femur and tibia in position, inasmuch as the ligament becomes loose and relaxed when the limb is adjusted upon the splint.

"Since firm ankylosis is aimed at after the operation, the quadriceps muscle is of little value, and it has not been shown that the retention of the patella has increased the usefulness of the limb."

Golding Bird preserved the patella, but sawed it through transversely to reach the joint, and after the excision, united the two fragments of the bone with sutures.

Experience with traumatic transverse fractures of the patella has not shown subsequent bony union in a sufficient number of cases to give confidence as to its being of great use after division in the operation of excision of the knee.

Reidinger, like Neuber, would saw off the posterior surface of the patella, freshen the corresponding surfaces of the femur and tibia, and hold in contact by two steel nails driven straight in through the patella, one going into the femur and the other into the tibia. (*Centralbl. f. Chir.*, 1887, p. 440.)

Swain says that he has frequently seen severe spasm of the muscles of the thigh pull the femur up and render the adjustment of the limb most difficult; this seems to indicate that in transverse section of the patella there would be great difficulty in holding it in place, and this would complicate the operation upon the tibia and femur.

To avoid the disadvantages of transverse incisions through the patella, the longitudinal section was resorted to in order to have the unbroken restraining force of the patella and its attachment to the tibia to prevent flexion.

Treves says: "The method by a longitudinal incision is difficult and tedious; a small space is provided, a good view of the interior of the joint cannot be obtained, the removal of all the diseased tissue is less

surely effected, and good drainage cannot be provided for unless a special drainage incision be made."

From what has already been said about the doubtful efficiency of the patella, the longitudinal incision offers no advantages over other methods. The supposed action of the flexor muscles in the production of flexion or posterior displacement of the tibia has led to their division as a part of the operation of excision. It is still a matter of dispute as to whether posterior displacement of the tibia is produced by the action of the flexor muscles, or whether it is an anterior displacement of the femur produced by the action of the extensor muscles of the thigh. I am inclined to the view that the latter is the predominant factor, depending upon the efficiency of the splint.

Erichsen has never found it necessary to divide hamstring tendons, and believes it complicates the operation. (Erichsen's *Surgery*, vol. ii. p. 270.)

Swain (*Injuries and Diseases of the Knee-joint*, 1869, p. 76) directs attention to the fact that the simple division of tendons in contracted knee-joints, where the tibia is dislocated backward, is sometimes of little use, as the contraction is found more in the fascia and deep tissue in contact with the posterior capsule than in the tendons themselves.

Gross says: "One of the most annoying occurrences to be guarded against is the tendency which the tibia has to be drawn outward and backward by the action of the flexor muscles of the thigh," and recommends subcutaneous section of tendons of the offending muscles. (Gross: *System of Surgery*, ed. 1872, vol. ii. p. 1099.)

Phelps, already quoted, regards the division of the hamstring tendons as an essential feature of the operation of excision.

The restraint afforded by the posterior ligament of the knee-joint is, I believe, of doubtful value from its naturally relaxed condition after the excision of the bones, to the amount of one to two or more inches.

Treves believes that in the majority of instances it is possible to leave the posterior ligament undisturbed. (Treves, p. 687.) And Moullin says that if the posterior ligament has been preserved, the bones are fairly secured without anything else. (Moullin, p. 594.)

In all of the operative procedures more or less reliance is placed upon the splint, according to the operator's views of the efficiency of the methods employed for securing internal fixation. The character of the external support is also directed from the same standpoint, and the forms of splints are more numerous than the methods of operating and producing internal fixation.

Heath recommends "a simple straight splint, reaching from the foot to the back of the thigh, with a foot-piece, which is all that is necessary for the treatment, and may be either iron or wood." (Heath: *Minor Surgery and Bandaging*, p. 265.)

Treves says: "Such a splint should be provided as will allow the bones to be kept in good position, will permit of free inspection and examination of the wound, and will not interfere with dressing and drainage." (Treves, p. 692.)

Bradford and Lovett recommend a perineal crutch (in the form of a Thomas splint), which shall prevent bearing any weight on the leg until several months after the operation. (*Orthopædic Surgery*, p. 394.)

"In general, however, plaster-of-Paris forms the most satisfactory splint put on over a heavy antiseptic dressing." (Bradford and Lovett: *Orthopædic Surgery*, p. 393.)

Moullin speaks of the necessity of having the splint arranged so as to have the limb entirely out of the patient's control. (Moullin's *Surgery*, ed. 1891, p. 595.)

This would appear to be the clearest description that could be given for a splint, no matter of what material it should be constructed. I have seen splints in use that appeared to be all that could be desired, but upon further inspection it was found that the patient could readily move the femur in almost any direction. While this motion was limited, it was sufficient to retard the union or to produce some of the displacement referred to in cases where firm approximation was not obtained by internal fixation. In an adult it might possibly be safe to depend upon the patient to keep the leg still during the daytime, but irreparable damage could occur at night.

It is clearly apparent that the length of time the splint is used is of great importance, and yet upon this subject writers vary greatly.

The *American Text-book of Surgery* (p. 1134) recommends that "immobilization should be maintained for two, or, better, three months, and a posterior splint should be worn for many months longer."

Erichsen says: "If a useful limb can be preserved to the patient, it can matter but little if a few additional weeks be devoted to the procedure by which it is obtained." (Erichsen, vol. ii. p. 271.)

Treves urges that "The after-treatment is, on the whole, of more importance than the operation itself." (Treves, p. 681.) And this I have found warranted by a review of the cases already given, and as well in 10 cases operated upon by others that I have seen years after the excision was performed. In 5 cases there was a resulting flexion; in 3 there was posterior displacement of the tibia; in 2 there was marked rotation of the tibia. In all of these patients there was, six months after the operation, perfectly straight legs, and the union firm enough to bear the weight of the body.

In 2 cases the deformity began at seven months after excision; in 3 cases the deformity began at one year; in 2 cases the deformity began at one and a half years; in 1 case the deformity began at two years;

in 1 case the deformity began at two years and three months; in 1 case the deformity began at three years.

It was impossible to obtain more definite information from these patients, but I have reason to believe that their statements are accurate.

As the knee is stiff, or designed to be, there can be but little objection to the prolonged use of a steel apparatus that would weigh, say five or six pounds at the most. The slight annoyance from the use of such a brace would be more than compensated for by the assurance of having a permanently straight and useful leg. Its use would act as an indicator of any yielding of the knee, and would direct attention to the necessity of avoiding its use in walking, or to its being given still greater support.

CONCLUSIONS.—The following statements appear to be warranted:

That metallic bone-sutures will secure the most efficient internal approximation.

That they should never be removed unless some serious conditions demand it.

That the entire leg should be kept free from the patient's control by external splint for from four to six weeks.

That the most important element in the treatment is the prolonged use of a rigid brace.

SYMPHYSIOTOMY; WITH THE REPORT OF A SUCCESSFUL CASE.

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SYMPHYSIOTOMY is an operation by which the symphysis pubis is cut through.

History.—Its history is interesting and full of instruction, but I shall limit myself to a meagre outline, referring those who want more information in this respect, to Kilian's *Operative Geburtshülfe*, Bonn, 1849; Corradi's *Dell' Ostetricia in Italia*, Bologna, 1874; Mangiagalli's *Una Probabile Risurrezione nel Campo dell' Ostetricia Operativa*, Milano, 1882; Desforges' *Thèse de Paris*, 1892, and the article by Robert P. Harris, "Revival of Symphysiotomy in Italy," in THE JOURNAL, January, 1883.

In 1768 Jean René Sigault, a French student, proposed the operation to the Academy of Medicine of Paris, and although it was rejected, he had the courage, after having graduated, to perform it, assisted by Leroy, on the wife of a soldier in 1777. At that time Cæsarean section was

almost sure death, and the new operation being supposed to be destined to supplant it, was hailed with enthusiasm, although the result in the first case was far from satisfactory.

A medal was struck by the Academy in honor of the operator, the new operation was extolled from the pulpit, and Camper, who enjoyed the reputation of being the greatest obstetrical authority of his time, declared himself in favor of it. On the other hand, Baudelocque and Lauverjat opposed it from the beginning. It found favor in Italy, but was rejected in England and Germany.

Its following history may be divided into four periods. The first ranges from its introduction in 1777 to the year 1858, for which eighty-one years Harris has only succeeded in finding seventy cases in which it was performed, with a mortality for the mothers of 37 per cent., and for the children of 67 per cent. In spite of this fearful mortality the operation was taken up again by Prof. Morisani, of Naples, and he and other Italian obstetricians performed fifty operations during the fifteen years 1866–80, reducing the mortality for the mothers to 20 per cent., and for the children to 18 per cent.—an immense progress, especially in regard to the latter.

The third period is a short one of only five years (1881–85), during which fifty-two operations were performed, with a maternal loss of 44 per cent., and a fœtal loss of 13.5 per cent.[1] If something was gained for the children, the result in regard to the mothers was so much the worse.

The fourth period extends from the beginning of 1886 until the present time, and in it the year 1892 will probably form a turning-point, the operation having spread from Italy, in which country it found a home at a time when it was unanimously proscribed everywhere else, to France, Germany, Austria, Russia, the United States, Ireland, and Canada.[2]

The origin of this newest movement can clearly be traced. In vain had Morisani written on the subject time and again.[3] Most obstetricians cannot read Italian, and if they go to Naples it is more to look at the blue grotto and climb Vesuvius than to inquire for the latest progress in medicine. In vain Mangiagalli, in the north of Italy, had called attention to what had been done in Naples. In vain Harris simultaneously placed the matter before the English-speaking world. But in the year 1891 it so happened that Spinelli, a pupil of Morisani,

[1] Editorial in The Medical News, Philadelphia, October 22, 1892; probably from the pen of, or inspired by, Dr. Harris.

[2] Private communication from Dr. Harris.

[3] Sulla Simfisiotomia, Ann. di Ostetricia, 1881, vol. iii, No. 10; Manuale di Ostetricia, Napoli, 1883, pp. 241–47; Ancora della Simfisiotomia, Ann. di Ostetricia e Ginecologia, 1886, vol. viii. pp. 345–91, with a tabular record of eighty cases, 1777–1858.

during a visit to Paris, demonstrated the operation on the cadaver to Prof. Pinard, who wrote an article in its favor even before he had performed it.[1] Simultaneously Dr. Charpentier, of Paris, heard Morisani lecture on the subject in Naples, and presented a report on it to the Academy of Medicine. When Pinard had performed two operations, Freund performed one in Strassburg, in Alsace, the tie between France and Germany. Then Leopold followed in Dresden, and gradually it spread all over the world—my case being the first in the city of New York.

Since the beginning of 1886, 67 operations have been performed, with a maternal mortality of 3, *i. e.* 4.5 per cent.[2] As to fœtal mortality, I know of 8 cases, counting the first three days after birth.

FIG. 1.

Kyphotic pelvis.

Personally I became interested in symphysiotomy through Harris's article, corresponded with Morisani, and had Galbiati's falcetta sent to me from Italy, in 1883. I performed it three times on the cadaver, as described by Morisani, without much difficulty. A fourth case, of which I add a photograph (Fig. 1), was the first patient upon whom I performed Cæsarean section.[3] In her, symphysiotomy would have been counter-indicated, because the left sacro-iliac joint was made immovable by synostosis and the right was the seat of extensive caries.

[1] Pinard: Annales de Gynécologie, February, 1892, vol. xxxvii. p. 83.

[2] Private communication from Dr. Harris, of Feb. 9, 1893.

[3] Garrigues: The Improved Cæsarean Section, American Journal of Obstetrics, April, May, and June, 1883, vol. xvi.

Besides this, the symphysis was so irregular that no knife could have been drawn through it. The pelvis of one of the others has become particularly interesting because it is not only of the same kind as that of the living patient upon whom I have performed symphysiotomy, but has exactly the same measurements. We shall come back to it later.

I burned to be the first to perform symphysiotomy in America; but taking into consideration that (at that time) there yet was a considerable mortality; that the old histories reported that women who had undergone the operation had remained invalids for life; that in this country physicians are frequently sued for malpractice, which, even in the case of their getting a verdict in their favor, entails great loss of time and a large fee to a lawyer; and that in my case I would have every chance of losing my suit, since nobody in this city believed in the operation—taking all that into consideration I thought, with Falstaff, that "the better part of valor is discretion," and my imported knife was allowed to lie for nearly a decade in a drawer with other discarded instruments.

Now, everything is changed. Harris's last paper and the reports from France and Germany have called the attention of the American Gynecological Society to this operation; every member of this leading society who spoke about it at its last meeting expressed himself in favor of trying it, and all the instrument-makers of the city vied with one another to borrow my falcetta, in order to make a pattern of it. With such a backing it has become quite safe to try the new operation.

Still, before we are dazzled by the report of recent triumphs and rush into reckless imitation, we had better hear what the obstetricians of bygone days, who were opposed to the operation, had to say against it, and examine the conditions of modern success.

Not only was the mortality for both mother and child great, but not infrequently the operation was followed by invalidism. Usually the woman kept a vesico-vaginal fistula (which before Marion Sims's time was practically incurable), incontinence of urine, an unsteady gait, prolapse of the uterus, or carious destruction of the pubic bones. Frequently one or both sacro-iliac joints ruptured—an accident followed by suppuration of these joints with widespread abscesses and destruction of bones. Sometimes the urethra was strangulated between the ends of the bones.

The operation was much more painful than Cæsarean section, and in the way it was then performed it was "incomparably more difficult." If the patient survived, it was after long sufferings. Cases were not lacking in which women who had been symphysiotomized once, or oftener, subsequently, without the help of art, gave birth to living children, whereas the former painful operations had only yielded dead

children. Many horribly cruel operations were performed with sharp instruments on the living child. The very base of the operation was sapped by the declaration of William Hunter and other great anatomists, who declared that the gain obtained as to space was insignificant. A great drawback was also the circumstance that the surgeon cannot be certain beforehand that he will be able to perform the operation, since he may encounter synostosis of the pubic or sacro-iliac articulations.

Fortunately we live in a time when the pain inherent in the operation, thanks to American genius, need no longer be considered. In old times they cut from the front backward, and do not seem to have taken precautions to protect the urethra and the bladder. Nowadays it would in all probability be possible to cure, by a subsequent operation, a vesico-vaginal fistula left by the first, but it is well to bear in mind that the bladder, the vagina, and the urethra may be caught between the ends of the pubic bones. This may have considerable weight in determining the best *modus operandi*, a point to which we shall come back later.

Many of the diseases produced by the operation were due to erroneous ideas about its applicability. Sigault himself thought that his operation could give help in any degree of narrow pelvis; that it was a substitute for Cæsarean section, and that it was particularly indicated with a true conjugate of two and one-half inches. Paul Dubois was the first who said that Cæsarean section and symphysiotomy had an entirely different field, one beginning where the other stopped, and that symphysiotomy was indicated with a conjugate of just three inches. The old operators had imperfect means of keeping the ends of the bones together. They did not even attempt to obtain healing by first intention, and dressed the wound with charpie smeared with cerate. Antisepsis was unknown.

The bad results obtained in regard to the mother were due to lack of knowledge of the proper limits of the operation; to injuries inflicted on the genital canal before the operation was performed; to a bad technique; and to bad wound-treatment. The fœtal mortality was due to the use of symphysiotomy when the pelvis was too small; to delivery at too early a stage of labor; and to improper methods of delivery, especially turning and extraction. As to the space gained, the old anatomists were decidedly in error, as has been abundantly proved by numerous experiments on dead bodies and operations on the living.

In order not to bewilder the reader, I shall premise that the following history is that of a perfectly successful symphysiotomy complicated with puerperal infection.

CASE. *Generally contracted pelvis with male type; in labor thirty-eight hours; symphysiotomy; metritis; nephritis; recovery; child living.*—On December 30, 1892, a little after midnight, I was requested by Dr. S. Murtland to see Mrs. B. with him. She was born in New York, is twenty-four years old, and has been married two and a half years. She has had one child, which was extracted dead by high forceps operation one and a half years ago; and one

miscarriage in the middle of the third month, a year ago. The last menstruation began on March 5th.

When I saw her at 1 A.M. she had been in labor since 3 A.M. of the 29th. Dr. M. had seen her at 9 A.M. and found the same condition as I found sixteen hours later, namely, the cervix hanging soft in the vagina like a bell; the internal os half dilated, but entirely dilatable; a large head above the brim of the pelvis; the posterior fontanelle to the left anteriorly; the fontanelle small and the sagittal suture very narrow. Waters unbroken. The patient was in excellent condition, but labor pains rare.

At 9 A.M. we met again and found the same condition. I measured the pelvis with pelvimeter and hand, and found the following measurements, which are all smaller than the average, viz.:

			Normal.[1]
Spina ilium . . .	21 cm.	= 8¼ inches.	10½ inches.
Crista ilium . . .	25 "	= 10 "	11½ "
Diameter Baudelocque .	18.5 "	= 7¼ "	8 "
Conjugata diagonalis .	10 "	= 4 "	5 "
Symphysis . . .	6.5 "	= 2½ "	2½ "

The true conjugate was estimated to be 3¼ (82 mm.) with a generally contracted pelvis. Strong fœtal heart-sound 2 inches below and to the left of the umbilicus.

I then strongly advised symphysiotomy, urging that the first child had been lost, and the following were, as a rule, larger; that while there was a possibility that this one might be born alive, it was very unlikely that it could be done with turning or forceps; and that even to the mother the danger with that form of pelvis, in my experience, was considerable, whereas symphysiotomy gave an excellent chance of saving both mother and child. I explained the matter to the priest, who readily consented to a procedure that was greatly in favor of the child, and even gave the mother better chances than the old operations.

During the day labor pains ceased altogether. At 5 o'clock in the afternoon I operated in the patient's home, a common tenement-house. She was dirty and covered with dirty clothes. I was assisted by Drs. Murtland, G. D. Stewart, and A. P. Coll. The patient was placed on a table and etherized, the pubic hair shaved off, and the skin near the genitals, as well as the vagina, disinfected with soap, water, and bichloride of mercury (1 : 2000).

The patient was laid on her back, the knees and hips bent by the assistants. With a large convex scalpel I made an incision in the median line from a finger's breadth above the symphysis to the clitoris, and down to the joint between the pubic bones; but finding that this was too small to give access to the whole symphysis, which was fully 2 inches (5 cm.) high without the soft parts, I prolonged the incision both above and below, going ¾ inch (2 cm.) below and to the left of the clitoris, between the labium majus and minus, until the whole incision was 4 inches (10 cm.) long. There was so much adipose tissue on the mons Veneris that it was 3 inches deep when the lips were separated. During this time only half a dozen small vessels bled, which were caught with artery forceps, and did not need tying.

Next, I introduced a blunt, flexible silver director with a curvature corresponding to the posterior surface of the symphysis, close to the same, in order to separate the soft tissue from the bone; and after having withdrawn it I inserted sideways a common blunt-pointed, concave bistoury (Fig. 2, b), turned it against the symphysis, and cut it easily through from behind forward, and from above downward.

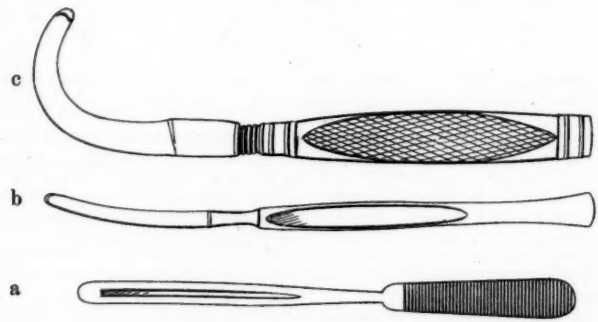
At the last moment, when the lower end was severed, there was a profuse hemorrhage, which instantly filled the deep well. I stuffed this provisionally with iodoform gauze, and proceeded to deliver the child. Henceforth to the

[1] Lusk: Science and Art of Midwifery, 2d ed., New York, 1885, p. 464; supplemented by Spiegelberg: Lehrbuch der Geburtshülfe, 1878, p. 13.

end of the operation the assistants were directed to press moderately on the trochanters in order to prevent too great a strain on the sacro-iliac articulations.

With the fore and middle fingers of the left hand I tore the membranes, which gave exit to a *liquor amnii mixed with so much meconium as to be dark brownish-green, and as thick as pea-soup.* I pushed the hand over the face and seized both feet at once and pulled them down, but the head not receding I put a fillet round the ankle of one in the vagina and pulled it out. After that I pulled the second leg out. The arms were easily delivered, but *the head offered considerable resistance.* The cord was wound twice round the neck; it was loosened and pulled down over the body. I had to introduce the fore and middle fingers into the mouth of the child, and although complete flexion was obtained in this way I had to use all my force on the shoulders of the

FIG. 2.



a. Hay's director. b. Bistoury used. c. Galbiati's falcetta.

child. For a change, I tried the Prague method of seizing both feet and pulling them suddenly and forcibly up over the mother's abdomen, but that did not help at all. I therefore returned to Smellie's; and while the meconium poured out from the anus, and one of the assistants declared to the friends, who, in spite of all entreaties and remonstrances, persisted in witnessing the operation from end to end, that the child was lost, I felt it suck on my fingers, and soon had it out without even tearing the perineum. It was a boy, weighing 7½ pounds (3400 grammes). He gasped and needed only a little spanking to make him cry.

The placenta followed spontaneously, while an assistant compressed the uterus. An intra-uterine douche of two quarts of a 2 per cent. solution of carbolic acid was administered.

When the gauze was removed from the wound the hemorrhage continued, and three arteries had to be tied by carrying a silk thread around them with a strongly-curved needle, through the dense fibrous tissue in which they were imbedded. After that there remained only an insignificant oozing from the wall of the vagina, in the lower part of the wound. In the upper part was the bladder bulging out between the ends of the pubic bones.

These ends, even when some pressure was made on the trochanters, were 1½ inches (4 cm.) apart. I did not try to separate them, and during the extraction they were not visible, so that I am unable to tell how much distance there was between them while the head passed the pelvis.

I tried to insert sutures into the cartilage, as described by Leopold,[1] but

[1] Leopold: Centralblatt für Gynäkologie, July 30, 1892, vol. xvi., No. 30, p. 586.

there was so little cartilage on the end of the bone that it was impossible. I then passed three silk sutures (braided No. 4) through the fibrous tissue in front of the bones, had the bladder held back with the end of an artery forceps, and the trochanters pressed on while I tied the sutures. Next I united the edges of the incision in the soft parts by seven interrupted sutures of the same kind of silk. The six were deep, taking in nearly the whole thickness of the tissue, and one superficial between the two upper deep ones, where the adjustment was a little deficient. When the sutures had been tied, I dusted the wound with iodoform powder, and covered it with iodoform gauze and gutta-percha tissue. Now I had the patient removed to her bed, where three straps of rubber adhesive plaster, two inches wide, were tightened around the trochanters and crossed on the abdomen, just above the wound, while the legs were kept stretched out. A pad of cotton impregnated with corrosive sublimate was placed on the abdomen and held in place by five straps of adhesive plaster, as after laparotomies. A many-tailed muslin bandage was put outside, and a piece of the same material attached to it in front and behind, so as to hold the dressing and a layer of bichloride of mercury cotton covering the lower part of the vulva and the anus in place. A knee-binder allowing a separation of five inches was fastened by suspenders on either side to the abdominal bandage.[1]

The patient rallied soon. Pulse 120. Complained of some pain, for which she was given a hypodermatic injection of solut. morph. sulph. (Magendie) ♏viij. Diet: Milk, with lime-water, and oatmeal gruel.

The next morning (December 31st) she was free from pain, and remained so during the whole course of the convalescence. She passed her urine herself, being lifted by the trochanters while the bedpan was pushed in and drawn out. The child was allowed to nurse three times a day, and got besides diluted boiled cow's milk to satisfy his hunger. As a curiosity, showing how irrationally the lower population treat their babies, I may add here that at the end of four weeks I found out that he had been given whiskey all the time. No wonder his face became full of pustules, which disappeared as soon as the alcohol was withdrawn.

The child's head measured, at the end of twenty-four hours:

			Normal.
Occipito-mental diameter .	. 14.5 cm.	= 5¾ inches.	5½ inches.
Occipito-frontal " .	. 11.7 "	= 4⅝ "	4½ "
Bi-parietal " .	. 10.0 "	= 4 "	3⅞ "
Bi-temporal " .	. 8.0 "	= 3¼ "	3¼ "

—measures which nearly all exceed the average as given and reduced to inches by Lusk,[2] after Tarnier and Chantreuil.

On January 1, 1893, the patient had a temperature of 102.5°, but the friends said she had had an emotion; she felt very well, and the next day the temperature was again down below 100°. On the 3d and 4th it rose, however, and on the 5th she had a chill lasting twenty-five minutes, during which it reached the tremendous height of 107.5°, and was accompanied by delirium. Ordered ice-cap on the head, antifebrin gr. ijss, and quinine gr. iv, every two hours. Brandy, hot tea, hot bottles to the extremities. On the 6th the temperature was down to 100°, and on the 7th she had again a chill, not so long or so bad as the previous, but still with the thermometer rising to 107°. After that she continued to be moderately feverish until the 20th. The pulse reached 180 per minute during the first chill, and became first normal on January 26th.

[1] See figure in Garrigues' Guide to Antiseptic Midwifery, Detroit, Mich., 1886, p. 28; and American System of Obstetrics, edited by Hirst, 1887, vol. ii. p. 334.

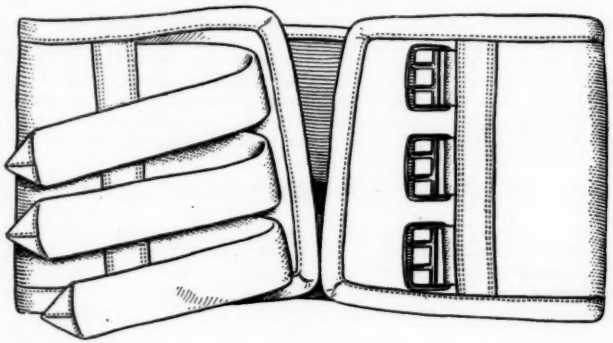
[2] Lusk: Loc. cit., p. 174.

When, on January 4th, the temperature rose to 103°, the pulse beat 124 per minute, and there showed a little pus around the one superficial suture. I was afraid there might be suppuration in the depth of the wounds. I removed, therefore, besides the superficial suture above, the two lowest of the deep ones, and introduced a fine dressing-forceps, both from above and from below, until it touched the bone, but there was no trace of pus. Having once made the openings, I left, however, a soft-rubber drainage-tube in each. Next, turning my attention to the uterus, I found the fundus 1½ inches above the umbilicus, and tender, also a little tympanites, but no pain. She was given ergotine, gr. ij, three times daily; quinine, gr. v, every four hours; and brandy, ℥ss, every four hours.

When the second chill occurred (January 7th) I removed all sutures. The wound had healed by first intention, except where the tubes were kept lying. I washed out the vagina with a pint of carbolized water (2 per cent.), and then the uterus with three pints of the same, which brought out a dirty reddish-gray discharge. The intra-uterine injections were repeated once daily for five days; the vaginal were given every three hours, and kept up until January 15th.

On January 8th I examined the vagina carefully and found neither tenderness nor swelling, and the bones in perfect apposition.

Fig. 3.



Bandage.

On January 12th she had considerable diarrhœa, with watery, stinking movements. For this was ordered carbolic acid, ♏j, every hour, in a mucilaginous mixture, and it stopped immediately. The urine taken with the catheter was turbid, slightly acid, and contained many pus corpuscles and epithelial-cells from the kidney; no casts and no free albumin.

On January 15th the urine was clearer, but contained yet numerous kidney epithelial cells and pus corpuscles. For this catarrhal nephritis and her general debility, she was given tr. ferri chloridi, ♏x, every four hours; tr. nuc. vom., ♏v, every four hours; and tr. strophanti, ♏v–vj, every four hours.

On January 22d the urine was clear and did not contain any abnormal bodies. In the meantime her appetite had become excellent.

From January 16th we fed her on buttermilk, fried chicken, mutton chops, and beefsteak.

On January 18th the uterus was below the pelvic brim. She could lift her

legs, or stemming her heels against the bed lift her pelvis, and turn the knees out, without having any abnormal sensation and without any diastasis in the symphysis examined by the finger in the vagina. There was perfect linear union, no callus, no tenderness, and no mobility in the symphysis.

On January 19th the straps around the pelvis and the drainage-tube were removed, and replaced by a broad bandage of gray coutil with three straps and buckles. It measures 90 cm. (35½ inches) at the top, 93 cm. (36½ inches) at the bottom, and is 14 cm. (5½ inches) broad. (Fig. 3.) This was removed when she used the bedpan, and was left off altogether on the 28th.

On the 23d she got up and walked with a little support. After that she was up every day and walked alone. Her gait is perfect, and she feels all right except for some weakness.

The lochial discharge continuing bloody, iron was exchanged for decoctum gossypii[1] with immediate effect. As a tonic she used caffeine, gr. ij, four times a day, and later a mixture of bark with aromatic sulphuric acid.

It appears from the above abstract of the history of the case that the operation as a surgical proceeding was a complete success, the mother and the child being in excellent condition; but as to the medical side of it, I had to deal with a most serious case of puerperal infection, which had no connection whatever with the operation as such. What was the source of this infection it is impossible to find out. I am so identified with antiseptic midwifery in this country that I am sure my readers on this side of the ocean will believe me, when I declare positively that I did not bring any infection to her during my examinations. Every time I scrubbed my hands most scrupulously, cleaned the nails carefully, and held the hands immersed in a solution of bichloride for three minutes. But there are numerous other ways in which she may have been infected. She had been examined repeatedly before I saw her; she was in labor for thirty-eight hours; all her surroundings, as well as her clothes and person, were dirty; meconium poured out into the liquor amnii; the instruments were kept in the vessels the family use for their meals, and were disinfected by an assistant who has much to do with dissections; during the operation another assistant became excited over the hemorrhage and poked his finger deep into the wound; although I constantly dipped my hands in corrosive sublimate solution during the operation, yet to come in contact with unclean objects was unavoidable; finally, she was, after the operation, taken care of by nurses who were anything but aseptic.

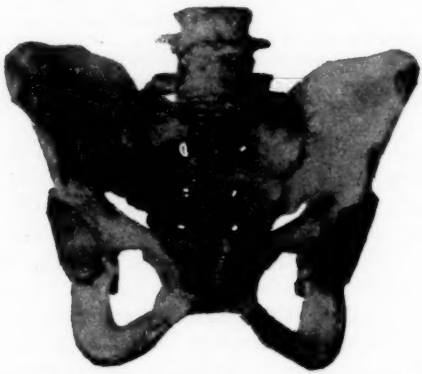
Upon the whole, antisepsis in a tenement-house is a very different thing from antisepsis in the operating-room of a hospital, where patient, doctors, nurses, and surroundings are all rendered aseptic. Nearly all the reports I have read about operations in Italy, France, and Germany have been performed in lying-in institutions, which doubtless has

[1] I have called attention to the great value of this uterine hæmostatic in an article in the Post-Graduate, January, 1888, vol. ii., No. 2, p. 117.

been a puissant factor, not only in the final result, but in the uneventful course of the lying-in period.

Although I am happy to report that mother and child are in excellent condition, I have the rare chance to be able to illustrate this article with engravings made from the photographs of a pelvis which offers,

FIG. 4.



Generally contracted pelvis with male type. (Front view.)

FIG. 5.

Same, seen from above.

to all intents and purposes, the same shape as that of my symphysiotomy case described above. (Figs. 4 and 5.) It comes from Mrs. R., a twenty-five-year-old primipara, whom I delivered in Maternity Hospital, on January 25, 1884, by a most difficult turning, extraction, and

perforation of the head through the spinal canal,[1] the mother dying from shock two days after delivery.

	Mrs. R.		Mrs. B.
	Skeleton.	Living.	Living.
Sp. Il.	8½ in. = 21.6 cm.	8¼ in.[2] = 21 cm.	8¼ in. = 21 cm.
Cr. Il.	9¼ " = 23.5 "	10 " = 25.5 "	10 " = 25 "
D. C.	4¼ " = 10.8 "	4 " [2] = 10.2 "	4 " = 10 "
D. V.	3¾ " = 9.5 "	. . . (estim.)	3¼ " = 8.3 "

Smallest available: Mrs. R. (skeleton), 3½ in. = 9 cm.

Height of symphysis: Mrs. R. (skeleton), 1½ in. = 3.8 cm. Mrs. B., 2 in. = 5 cm.

D. B.: Mrs. R. 6¾ in. = 17 cm. Mrs. B. (a stout woman), 7¼ in. = 18.5 cm.

Transverse diameter of inlet, Mrs. R. 4¾ in. = 12 cm.

Oblique diameter of inlet, Mrs. R. 4⅝ in. = 11.7 cm.[3]

Even the children must have been of the same weight, Mrs. R.'s weighing 7 6/16 pounds after evacuation of the brain, and Mrs. B.'s 7½.

This male type of generally contracted pelvis is the most common kind of narrow pelvis I have met with in New York, and Dr. Edward Reynolds made the same remark about Boston at the last meeting of the American Gynecological Society.[4] During a service of over ten years in Maternity Hospital, I have not seen a single rickety pelvis. The population I had to deal with was, with few exceptions, American or Irish. With the great deterioration in the quality of immigrants and the enormous increase in the number of women coming from Italy and Russian Poland, we will, however, soon have all the shapes of pelves described by European authors.

This kind of pelvis is particularly difficult to deal with, and I had so often had the same sad result of my labors as in the case of Mrs. R., that in the last case I had of the kind I even dictated an entry in the history-book of Maternity Hospital to the effect that in my opinion it would be better hereafter to perform Cæsarean section in such cases. But now we have in symphysiotomy the very remedy for this form of pelvis.

In the above-described case, the true conjugate was estimated to be 3¼ inches; but, taking into consideration that—if we substitute the

[1] By the way, this excellent method of dealing with the after-coming head of a dead child is also an old Italian invention.

[2] These are the measurements as they are found in the history; but they are, of course, too small, since the pelvis, without the soft parts, measures more. Such small errors are, however, unavoidable in dealing with living patients.

[3] Normal (according to Lusk, loc. cit., p. 158): Transverse, 5¼ in. = 13.3 cm.; oblique, 5 in. = 12.7 cm.

[4] E. Reynolds: Trans. Amer. Gyn. Soc., 1892, vol. xvii. p. 124.

measurements of the superior strait as found in Mrs. R.,—the transverse diameter is half an inch, and the oblique nearly as much, below the average, the obstetrical effect is about the same as in a flat pelvis with a conjugate of 2¾ inches or less.

I am confident that that child could, neither by turning nor by forceps, have been brought out living; and if, with the comparatively mild operation of symphysiotomy, we had so severe a case of puerperal infection, there is no doubt in my mind but that, with the same infection added to the bruising inherent in difficult forceps and version operations, the mother would have succumbed, too.

(*To be continued.*)

COCAINE IN THE TREATMENT OF VARIOLOUS AND VARIOLOID INFECTION.

By Edward Pepper, M.D.,
of Algiers.

In 1889 we published a report of an epidemic of smallpox and varioloid whose spread was promptly arrested under the most unfavorable circumstances.[1] The ancient, and therefore firmly fixed, habit of the Arabs of inoculating smallpox (generally between the thumb and the index) is well known, and constitutes a permanent source of danger to all communities dwelling in their neighborhood, as well as to those residing in their midst. This practice is one of the many factors—perhaps not the least—of the difficult problem offered to Europeans in their actual attempts at African colonization and improvement. In the United States vast territories, such as New Mexico, containing a mixed population composed, as yet, largely of Mexicans and Indians, among whom vaccination and, indeed, all hygienic measures are rare, pay a large annual tribute to the scourge.

Simply recalling the principal means employed to alleviate or to arrest the extension of the disease, such as the immediate isolation of the contaminated, and, when practicable, the application to a whole region, if necessary, of other rigid sanatory measures, generally even more difficult of enforcement, we consider that a short reference to the treatment first recommended by Luton will not be found wholly devoid of interest. This treatment consists, as is well

[1] A Contribution to the Study of Epidemic Diseases. P. Fontana & Co., Algiers, 1889.

known, in the judicious use of cocaine, given by the mouth or in the form of suppositories. The observations which we published at the time (1889) cannot be reproduced in a communication of the nature of this article, and reference simply is made to them, as well as to the subsequent observations, some quite recent, which we have related upon the same subject.

The benefit to be derived from the judicious use of cocaine in smallpox and in varioloid is such, from our personal experience covering the last four years, that we deem it important to recall the attention of the medical public to a mode of treatment offering such special advantages. Our conclusions, published four years ago, were and are yet as follows:

1. By the use of cocaine, variolous and, *à fortiori*, varioloid poisoning can frequently be arrested in a marked degree—strongly attenuated.

In smallpox the disorganization of the blood seems to be generally less rapid and less extensive after the careful administration of the drug; the fever is less severe and of shorter duration in most cases, secondary fever not being manifest sometimes; an incomplete evolution, a semi abortion of the vesico-pustules, or of the pustules, being of frequent occurrence when cocaine has been regularly employed during the second period of the disease, and that as soon as the eruption is clearly characterized; finally, the divers visceral congestions and inflammations are less frequent and less intense. Briefly, the whole course of the disease appears to be favorably modified in most if not in all cases.

2. As in all other diseases, so in smallpox, the actual stamping-out of the disease *ab incipio* can never be clearly proven to have been accomplished by any treatment; in smallpox the eruption must have become distinctive before the diagnosis can be firmly established. During an epidemic of the disease it would be interesting to study the possible action of the drug as a prophylactic when given to those who are particularly exposed to the contagion, such as the members of families where smallpox reigns, the unvaccinated, etc.

3. In variolous poisoning, toleration is strongly marked for a substance presenting special dangers when given under other circumstances and without due discernment—that is, without regard to the laws of posology and to possible idiosyncrasies.

4. When cocaine is given by the stomach, a 4 per cent. solution is conveniently administered four times in each twenty-four hours to a patient of five years of age; at the age of ten years ten drops four times in twenty-four hours, and so forth, increasing the doses by one drop four times during each twenty-four hours for each year of age; at twenty years of age twenty drops are to be given four times in the twenty-four hours. With the normal droppers to be procured from all chemists, this dose is quite sufficient. Each dose is to be given in a small quantity of

water or otherwise, according to taste. One-half of the above quantities is frequently sufficient to obtain the desired results. An agreeable mode of administering the medicine to children and to fastidious patients generally, although the drug is practically tasteless, is that which consists in giving it in the form of sweetened pastilles, each pastille containing the twenty-fourth part of a grain of cocaine, with or without a small quantity of pepsin.

Such are the posological scale and the mode of administering the medicine by the mouth which experience has taught us to employ in average cases.

5. The doses of cocaine given in the form of suppositories are not to be considered as being necessarily absorbed *ex integro;* in this latter form there is naturally an unknown quantity absorbed. The suppositories should be used at intervals of six or eight hours apart, the quantity of the medicine thus administered in twenty-four hours never being greater than that given by the mouth.

6. When given hypodermatically, a mode of giving cocaine scarcely to be recommended except in incipient cases of smallpox, where it could not be given by the mouth or by the rectum, the doses above recommended should be one-fourth of the doses indicated for ingestion in average cases.

7. The effects of all doses, in whatever manner given, should be attentively watched, idiosyncrasies as to the tolerance of all powerful drugs, and especially of cocaine, being of so frequent occurrence. At the first sign of a physical action being produced, the giving of the cocaine should be stopped and the well-known means of arresting its toxic effects should be employed.

8. Of course this treatment does not exclude the use of almost any of the usual means properly employed to combat the disease; but the field should be left free, as far as possible, to the full—and frequently so to speak, exclusive—development of the useful effects that we have a right to expect from cocaine when employed against smallpox in its second and third stages. As to topical remedies, whether calomel, salicylic acid or boric acid, or any other substance be preferred, they are generally a useful, frequently an indispensable, adjunct to this as well as to any other internal treatment of smallpox or of varioloid. In many cases where cocaine has been methodically given, topical treatment has been slight, and sometimes unnecessary.

NOTE ON A USUALLY OVERLOOKED CONDITION IN THE GRAVE CONVULSIONS OF INFANCY AND CHILDHOOD.

By Norman Bridge, A.M., M.D.,
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Two forms of convulsions are frequent in infancy and childhood. One is a true epileptic seizure that comes suddenly without apparent accompanying illness; the fit is brief, and is recovered from promptly and completely. This fit is apparently provoked by some slight physiological disturbance, as indigestible food in the alimentary canal; or none may be discoverable, the seizure appearing to be truly spontaneous. Often repeated, this becomes the confirmed epilepsy of later life.

In the other form, the fit is prolonged—a true eclampsia; at first violent, it passes into a state of slight convulsive movements, irregular jerking of the muscles, particularly of the face and head, not profound, but repeated at intervals of a few seconds or a minute or two, with often some divergence of the eyes and complete unconsciousness. In this way it may continue several hours or a day, ending in slow recovery or in death. The more prolonged the attack, the greater the danger of death.

By most practitioners these two forms are regarded and dealt with as identical; the short fits are regarded as milder seizures of the same character as the profound and long-continued ones, but a little careful observation of the eclamptic seizures will convince anyone that they differ in a marked manner from the evanescent fits. The most notable clinical difference—to emphasize which this note is written—is the presence of high fever (102° to 108° F.) in the eclamptic form. It may almost be regarded as an axiom that fever is present whenever the convulsive movements are prolonged beyond a few minutes, and that the movements cease, with evidences of returning consciousness, the moment the temperature is reduced to nearly normal. The higher the temperature, the more marked and persistent the convulsive movements usually are, although there are some exceptions to this rule.

The fever is probably induced by some zymotic poison, as that of an eruptive fever, or by some dietetic or other hygienic disturbance or derangement, by some fright or other shock to the nervous system, or there is some local inflammation or other pathological condition capable of inducing fever. Whatever the cause, there is a cerebral condition that must be similar to that of thermic fever or sunstroke; a condition of congestion or irritation that produces a powerful inhibitory influence on the heat-controlling centre of the brain, that both by what it is and what it does jeopardizes the integrity of the vital centres and induces a

tendency to death. This tendency is always, as in insolation, promptly lessened by a reduction of the temperature.

The temperature of a child in a convulsion should always be taken carefully with a thermometer; the sense of touch is wholly unreliable and should never be depended upon.

While many cases of convulsions in infants and children are treated by physicians, perhaps a majority are managed domestically, often in accordance with notions acquired from doctors, and whether in lay or professional hands the management is similar in the majority of cases. The child, if an infant, is usually put into a very warm bath, mustard is applied to its feet, and perhaps mustard is added to the water of the bath; it is then wrapped in thick wool blankets and kept in this state, whatever its apparent temperature, and its recovery is hoped for. The bath is not objectionable and may be useful if it does not raise the temperature or prevent its reduction, but the mustard is more harmful than otherwise; and any treatment that prolongs the period of fever or delays the moment of defervescence may be said boldly to be so reprehensible as to be wholly without excuse.

The best way to reduce the fever is by the use of water in the form of a cool bath or full sponging, with the patient nearly or quite naked. The extremities should not be allowed to become cold, and if the temperature is reduced rapidly the process should be stopped by the time the thermometer in the rectum registers 101° F. A temperature of 108° in a child can be reduced to nearly normal in half an hour, and with entire safety to the patient.

There are, doubtless, several sedative drugs that are capable, in these cases, of safely tranquillizing the nervous system, lessening the convulsive movements, and doing for the nerve-centres in a small way the something that is accomplished by a reduction of temperature. The best of these are opium and hydrate of chloral. The latter I regard as the most useful drug extant for such cases, and if it had no other claim to favor would, by what it is capable of doing for the class of children here referred to, be entitled to be regarded as one of the most useful of remedial agents. The dose should be at first the medium one for the age of the patient, but it should be often repeated, and may be increased rather rapidly to the maximum. We should be specially careful to know that the drug is absorbed. An enema is one of the best means of administration. Asafœtida, in the form of clysters of the officinal mixture pure, is a most useful remedy in these cases, to be used preferably after the bowels have been freely evacuated, but it cannot for a moment fill the place of chloral in tranquillizing the convulsive phenomena. The bromides are quite useless as a remedy for an existing attack; they are valuable to prevent recurrences, but act too slowly for an emergency.

Los Angeles, California.

REVIEWS.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By Landon Carter Gray, M.D., Professor of Nervous and Mental Diseases in the New York Polyclinic, etc. With 168 illustrations. Philadelphia: Lea Brothers & Co., 1893.

Dr. Gray's book has been announced as in press for a long while, so that his friends and the medical public in general have had ample time to form great expectations of it. It was but natural that the announcement of a new systematic treatise on nervous diseases by an American author should be received with interest in this country, because, while very prolific of journal articles and monographs, American neurologists have produced but few elaborated general treatises. It must have been felt by all that the time had come for a new and representative book, and that that author would be both happy and fortunate who would meet this want in the reading and teaching ranks of the profession. This want, we can now say, has been doubly met, for Dr. Gray's book appears in friendly rivalry with that of Dr. Dana; and how well we think it has done its part to fill the demand it will be our pleasure to state briefly here in review.

Dr. Gray's book has several merits, of a general kind, which at once strike even the casual reader. It has, for instance, the evidence of wide and industrious literary research. It is evident that the author has drawn, and drawn profitably, from many sources for illustration and enrichment of his text. This gives the book a special value for literary reference—an advantage of which we have already availed ourself. He has appended to many of his chapters copious bibliographical lists, which, even if they savor of the workshop, yet introduce the reader to many a valuable and timely book.

Another merit consists in the originality and distinctness of many of the photographic illustrations. While the book cannot be said to be copiously illustrated, yet many of the cuts are original, and these have been made from clear and evidently faithful photographs. This is true not only of the clinical, but also, what is much more rare in text-books, of the anatomical illustrations. We meet comparatively few of the old familiar diagrams that have been made to do duty to a generation of book-makers. We notice, however, that credit is not always given for borrowed illustrations, as, for instance, in the cases of several cuts from Edinger. This is doubtless an inadvertence, but as Dr. Gray says in his text that all illustrations are original except those credited to their proper sources, we think best to call attention to this omission.

The first chapter of the book is an Anatomical Introduction. The author has evidently taken great pains with this, and has made a praiseworthy attempt to found it as much as possible upon his own observa-

tion. To the clinician, who is not necessarily an expert in anatomy, the composition of this part of a text-book on nervous diseases must be often a sore trial, just as the result must sometimes be a disappointment to both himself and his readers. It is enough to say that this portion of Dr. Gray's book impresses us as being well and conscientiously done; that the author is thoroughly alive to the importance of making an anatomical study the basis of good neurological work; that he has not only made original investigations of the subject, but has wisely followed such masters as Meynert, Edinger, and Ferrier; and that he has thus composed a safe and intelligible guide to practice. We regret that he has not made more conspicuous, after the manner of Edinger, the embryological and comparative study of the brain, because this is at once the key to and the foundation of a clear knowledge of brain anatomy.

Dr. Gray shows his faith in electricity, and at the same time his appreciation of the wants of many of his readers, by presenting a very complete chapter on the subject. He tells us that he is not writing a text-book on electricity, but nevertheless he presents a chapter which, if printed alone, would be a very compact and useful little monograph on this essential agent.

Passing rapidly over the chapters on Localization and Tests, or methods of examination, of the various symptoms of nervous diseases—which chapters are composed with the same care and expressed with the same brevity and point as characterize the one on anatomy—we come to the gist of Dr. Gray's book, the clinical descriptions. Here, too, we note several general facts. Dr. Gray, for instance, always speaks with the dogmatism that marks the original observer and that carries conviction to the inexperienced and unlearned. Familiar tenets are here and there briefly criticised or condemned; while occasionally some novel clinical fact which has escaped all other observers is concisely stated—always with the directness of one speaking with authority. This tone in the book, which is always well modulated and thoroughly under control, will add attractiveness and weight to the author's utterances in the opinion of not a few of his readers.

Another general characteristic that strikes us most favorably is the prominence given to the symptoms and the treatment of these diseases. Hence Dr. Gray's book is a very practical one. It does not devote undue space to the microscopic appearances of diseased nerves and tissues which the general practitioner and student see hardly once in a life-time. Pathology and morbid anatomy, so essential to the expert, are not neglected; but therapeutics, the goal of the practitioner, is completely and exhaustively discussed.

How can we discriminate among these well-written chapters for the purposes of our brief review? We find here constantly the evidence of the thought and endeavor of a man whom we know to be giving us the best fruits of his life's work. To discriminate would be unjust. To merely praise would be fulsome; while to imply a fault would be as ungracious as it would be unmeant. We shall, however, specially note a few chapters which merit attention not because they rise above the general excellence of the others, but because their subjects commend them at this time to the attention of our readers.

Dr. Gray attributes multiple neuritis to a list of causes which almost without exception mean some form of poison circulating in the blood. He includes, it is true, age and sex—which can hardly be called the

causes of any disease; and cold and overstrain, which are probably merely predisposing; but all other causes named by him are infectious or toxic agents. The author is thus closely in accord with the best observation of the day, which tends steadily toward the establishment of a humoral or vito-chemical pathology. We make special mention of this, because this humoral pathology for a time seemed to have progressed no further than the periphery; the cord and other parts of the central nervous system being still, under the old dispensation, subject to degenerations and system-lesions which in many cases occurred, for all we knew, without a cause. But this criticism, we are happy to say, does not apply to Dr. Gray; for in his excellent chapter on myelitis he arrays almost the same causes as those leading to neuritis. He wisely adds trauma, and unwisely, we think, violent emotion. The former certainly leads to a destruction-myelitis, and both trauma and the emotions lead to a pseudo-myelitis, often a hystero traumatism, which ought to be carefully differentiated. As for cold, we believe that in Feinberg's experiments on rabbits, in which the loins were refrigerated and myelitis resulted, we see simply a form of destruction or trauma; while in many cases in the human subject, in which cold acts together with dampness, we may assume, with Gowers, the generation of a kind of "rheumatic" humor. The point that we wish to emphasize is that Dr. Gray seeks for an intelligible cause of inflammation as well of the cord as of the peripheral nerves.

That this same tendency to seek a definite cause is beginning to assert itself with reference also to the system-lesions, or degenerations, is shown by the recent attempt of Erb, Minor, and others to demonstrate that syphilis is the almost universal cause of locomotor ataxia. In this they but rehabilitate the doctrine of Fournier in 1875. Dr. Gray sees in all this a rare posthumous tribute to the clinical genius of Duchenne; and after this graceful introduction passes on to the description of tabes in a learned and highly finished essay.

Dr. Gray takes a singularly cautious and conservative attitude on the subject of syringo-myelia. His discussion of the pathology of the disease is founded evidently upon his usual extensive reading, which gives to his writing on this subject the air rather of learning than of observation. He quotes various observers, and seems to incline to a recent opinion of Joffroy and Achard as to the non-gliomatous nature of syringo-myelia. But this is largely a question of names; the point is that the disease presents a neurogliar proliferation with cavity-formation within the cord. To our surprise the author permits himself to doubt the accuracy of the symptomatology of this disease, and even says that a diagnosis has never been made before death. This is strangely inaccurate; and even more so to say, as Dr. Gray does, that a diagnosis of syringo-myelia *cannot* be made. We know of at least two cases in Philadelphia in each of which a diagnosis, based upon the symptomatology established by French and German observers, was correctly made several months before death, and verified by the autopsy. It is but just to Dr. Gray to say that these cases have not yet been reported. In his second edition we doubt not that the author will feel impelled to re-cast his chapter on this important subject—a subject which has great significance in its bearing upon our future conceptions of some of the diseases of the cord.

Dr. Gray discusses much more impartially such attractive subjects as Friedreich's disease, myxœdema, acromegaly, railway injuries, and

traumatic diseases of medico-legal interest. His chapter on this latter subject is remarkably clear and able. He systematizes and compares phenomena in a masterly manner, and with a precision which has evidently been acquired on and for the witness-stand. His bent is toward a distinctive symptom-group, caused by trauma, which when once recognized and adopted will enable everyone to determine these cases with exactness. In this attitude he is clearly on the American side as well as on the side of the plaintiff. He calls this symptom-group *traumatic neurasthenia*. He discusses but does not follow Charcot and the French school, who appear to us to have taken the most advanced scientific ground upon this subject.

Dr. Gray's book closes with an important section on mental diseases. This is a unique feature for a text-book on nervous diseases, and one, we are sure, that will commend it to many readers. After all, the two classes of subjects are closely allied, and a concise treatment of both within the same covers is for many a desideratum. Some of the author's statements are almost epigrammatic, and he wisely tells us that his classification of the insanities is found in the table of contents. In brief, but instructive chapters, he outlines the various psychoses and the few organic insanities. If space permitted, we would gladly draw attention to the many excellences which we have found in these portions, and which, we may briefly state, are identical with those already noted.

In closing, we congratulate the author upon the completion of his task, and hope for his valuable book a long and honored career.

J. H. L.

THE STUDENT'S HANDBOOK OF SURGICAL OPERATIONS. By FREDERICK TREVES, F.R.C.S. Philadelphia: Lea Brothers & Co., 1892.

THERE are few authors of the present day whose work so uniformly reaches the highest level as does that of Mr. Treves. He never writes ponderous nothings; he does not ride hobbies to destruction; he believes in theory as an aid to the practical; he insists on the importance of anatomical learning; he is a voice and not an echo, and he has, to a remarkable degree, the power of writing with clear condensation, and of marshalling his views in systematic array.

This book presents the characteristics we have noted. As it is abridged from the author's splendid manual of *Operative Surgery*, which was so recently reviewed, any extended notice of it is needless.

We here find presented the essential and "most commonly performed operations," for the use of students who are coming up for examination or who are doing operations on the dead body.

Each article is carefully subdivided under headings. For instance, under Ligation of Radial Artery we find "line of artery," "position," etc., as special headings which catch the eye and stick to the memory. Considered in the order named, are: ligature of arteries; operation upon nerves; amputations (in which Wyeth's bloodless amputation at the hip-joint is, through some strange oversight, omitted); operations on bones and joints; tenotomy; plastic operations; operation upon the neck; operations upon the abdomen; operations on hernia; operations upon

the bladder; operations upon the scrotum and penis; operations upon the rectum; operations upon the head and spine, and operations upon the thorax and breast.

This is an admirable little book, and a variety of work that men like Mr. Treves unfortunately so rarely undertake, that we have the market inundated with inferior productions. According to Gresham's law, debased money drives good money out of circulation. In literature a reversal of this process should occur, and good books ought to drive inferior ones out of circulation. If this latter rule obtains, a number of aspiring productions will find the dustiest corner, and this little work will be substituted on the study-table. J. C. Da C.

THE CHEMISTRY AND THERAPEUTICS OF URIC ACID GRAVEL AND GOUT. Being the Croonian Lectures for 1892, delivered before the Royal College of Physicians of London. With Additions. By SIR WILLIAM ROBERTS, M.D., F.R.S. 8vo., pp. vii. 136. London: Smith, Elder & Co., 1892.

IN these lectures, four in number, the author enters into an elaborate investigation of the chemistry of uric acid gravel and gout. With reference to these conditions his conclusions are: 1. That free uric acid is not known physiologically in the body nor in the urine, but is known clinically and pathologically as crystalline sediments in the urine and as gravel and calculus in the urinary passages. 2. That neutral urates are not known pathologically nor physiologically. 3. That bi-urates occur pathologically as components of gouty concretions in the tissues and that they occur in the urine only after it has undergone ammoniacal fermentation. 4. That quadri-urates constitute specially the physiological combinations of uric acid; they exist normally in the urine, and probably also in the blood; and that all the morbid phenomena due to uric acid arise probably from secondary changes in the quadri-urates.

In the normal urine after a varying length of time these secondary changes in the quadri-urates result in the spontaneous precipitation of the entire amount of the uric acid. Therefore, the pathological significance of uric acid depends upon the rapidity with which its precipitation takes place before the voidance of the urine from the bladder, or before the passage of the urine from the pelvis of the kidney to the bladder.

In his consideration of the therapeutics of uric acid gravel, the author holds that after a concretion has once formed in the kidney or bladder, but little prospect exists of its solution by imparting solvent qualities to the urine. It is chiefly in the field of prophylaxis that results are to be expected. The prophylactic measures the author recommends consist in the regulation of the diet as to the taking of nitrogenous foods, and the administration of alkalies, including the alkaline mineral waters. The alkalies, of course, are given with the view of keeping the urine alkaline, since it is impossible for the precipitation of uric acid to occur while the reaction of the urine is alkaline.

Under the consideration of gout, the author states that its most characteristic feature is the formation of chalk-like deposits in certain parts and tissues of the body; and that the essential component of these

deposits is bi-urate of sodium in the crystalline condition. If it were possible to keep the sodium bi-urate in a state of solution in the bodily fluids, the clinical picture of gout would be completely transfigured.

The precipitation of sodium bi-urate the author found, experimentally, to occur in the following manner: "In the gouty state, either from defective action of the kidneys, or from excessive introduction of urates into the circulation, the quadri-urate lingers unduly in the circulation, and accumulates therein. The detained quadri-urate, circulating in a medium which is rich in sodium carbonate, gradually takes up an additional atom of base, and is thereby transformed into bi-urate. This transformation alters the physiological problem. The uric acid, or rather a portion of it, circulates no longer as the more soluble and presumably easily secreted quadri-urate, but as bi-urate, which is less soluble, and probably also—either for that reason or because it is a compound foreign to the normal economy—less easy of removal by the kidneys. The bi-urate thus produced exists at first in the hydrated or gelatinous modification. But with the lapse of time and increasing accumulation, it passes on into the almost insoluble anhydrous or crystalline condition; and the precipitation of it becomes imminent, or actually takes place."

The treatment of gout the author considers from the standpoint of the prevention of attacks. After reviewing the proper diet and regimen suitable for a person of gouty disposition, the efficacy of certain mineral springs is discussed. The author holds that all waters owing their activity to sodium salts should be avoided, since an increase of these salts in the bodily fluids hastens the precipitation of the sodium bi-urate. Those springs, therefore, the waters of which contain a minimum sum of mineral constituents, he advises as being most useful in the gouty condition, their action being one of dilution of the blood with consequent lowering of the percentage of urates and sodium salts.

Piperazine, a drug of late attracting much attention, the author found to exercise no influence whatever on the advent of precipitation of sodium bi-urate. Although it is stated on page 129 that piperazine possesses a high solvent power on free uric acid, yet the author makes no reference to its employment in the treatment of uric acid gravel. T. G. A.

REGIONAL ANATOMY IN ITS RELATION TO MEDICINE AND SURGERY. By GEORGE MCCLELLAN, M.D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy, etc. Illustrated from photographs taken by the Author, of his own dissections, expressly designed and prepared for this work and colored by him after nature. In two volumes. Vol. II. Philadelphia: J. B. Lippincott Company, 1892.

IN our review (February, 1892) of the first volume of this important work, we considered at some length the characteristic principles which give the work its individuality, and the degree of success which the author had attained in executing it on the plan he had proposed to himself. The general conclusions we reached were: that, beautiful as the plates certainly were, some were decidedly wanting in clearness; and that

in all a more diagrammatic handling would have been better for teaching purposes. We had the pleasure of expressing our admiration of the author as a dissector and of praising the practical applications of anatomy scattered throughout the book. We intimated, however, that he did not follow methods of study which had become common only in the last generation, but adhered very closely to dissection (in which he excelled) and to non-frozen sections.

The second volume leaves our opinion on these points practically unchanged. There is much to praise in the plates. Many of those of the lower extremity are beautiful and very clear also. One of the superficial muscles of the back is admirable. Those of the internal parts please us less. Some, indeed, displease us, as those of median sections of the female pelvis, showing a long, distended, and quite unnatural vagina. The fault here is not so much in the plate as in the preparation. Plate 61 suggests an idea of the origin of the vermiform appendix which we cannot believe to be correct. It seems hardly possible that it should have arisen at the ends of the longitudinal bands on the cæcum, though we know it must have done so We are sorry to find no mention of this very important point in the text, for there is no surer nor simpler way of finding the appendix than to follow one of these bands. The treatment of the peritoneal relations of the cæcum seems to us wanting in clearness. We are told that this organ is usually surrounded by peritoneum, which is undoubtedly true; but only a few lines lower down we read that "there is often a great deal of loose areolar tissue between the posterior surface of the cæcum and the iliac fascia, which is the seat of abscess in cases of perforation of the cæcum or of the appendix." If this means that often the posterior surface of the cæcum has no peritoneal covering, we must beg leave to object. If it means that this areolar tissue is retro-peritoneal, it should have been so stated.

The liver is not described as having a posterior surface, nor is the last ascending portion of the duodenum mentioned. We find only that the third portion passes "somewhat obliquely across the spine." The important fact that the last part of the duodenum rises strongly is thus overlooked. On the other hand, the following passage is so true, and expresses so strongly Dr. McClellan's views, that it is a pleasure to quote it: "The triangular ligament of the perineal region, although undoubtedly important, has been so emphasized and exaggerated by laborious descriptions that the student who attempts to verify these upon the dissecting-table generally becomes bewildered, and is forced to accept a great deal on faith. Diagrams are, at the best, but the expression of ideas, and their very distinctness is misleading in producing the impression that all the structures pertaining to this especial locality are bounded by fixed lines." The use and abuse of the diagram in teaching is, indeed, a difficult question. Probably there would be less need of it if all teachers described this region as clearly and simply as our author does. There is at the end a good index of this volume, followed by another of the whole work. In our former notice we spoke of the excellence of type and paper. Though, in our opinion, the work is not free from defects of design and execution, it is one which calls for great praise.

T. D.

GUY'S HOSPITAL REPORTS, LONDON. Edited by N. DAVIES-COLLEY, M.A., M.C., and W. HALE WHITE, M.D. 1892.

DR. FREDERICK TAYLOR, in the same lucid style that made his work on Practice a notable one, contributes an article on "A Case of Actinomycosis of the Liver and Lungs," and another on "Malignant Endocarditis." The latter is particularly valuable, detailing as it does the histories of fifty-three cases, eighteen of which came under his personal observation.

Having discussed the nomenclature of the affection, he proceeds to speak of its pathology, which is well handled, although incomplete in a bacteriological point of view.

It is interesting to note that eleven of the fifty-three cases reported appeared on the right side, about the same proportion reported by other late writers. Hasler, for instance, found the right heart affected in thirty-four out of two hundred cases.

Dr. Taylor pronounces the prognosis to be very bad, but not absolutely hopeless, and cites some recoveries to substantiate his statement. It is difficult to understand why the disease should be so universally fatal, if we accept the dogma that it may originate from most varied sources. Who shall draw the line between the malignant and the simple cases?

The article is a real addition to our literature.

Mr. Davies-Colley reports a successful case of ileo-colic implantation, which is of interest not only because of its rarity, but because for a period of some months his patient had a fistula of the ileum, which part of the intestine was quite cut off from the remainder of the gastro-intestinal tract, thus affording an opportunity for studying the pure *succus entericus*.

Such study was made by Mr. Tubby and Mr. Manning, and their account of these investigations has led to some interesting and valuable pages.

These gentlemen refer to Dana's *résumé* of the work done on this subject up to 1882 (*Medical News*, Philadelphia, 1882, vol. xli. p. 59), after which they describe the qualities of the *succus entericus*, which they obtained under careful antiseptic precaution, and then relate their series of experiments. These they summarize by affirming that "a very important function of the succus entericus is to complete salivary and pancreatic digestion." The contribution is commended to those interested in this important field.

Dr. E. C. Perry and Dr. L. E. Shaw present a minute study of fifty specimens of malignant disease of the stomach, found in the hospital museum, which deserves high commendation.

Dr. H. J. Campbell suggests a new answer to the old question, "Why does phthisis begin at the apex?" He thinks that it is because these parts are extra-thoracic. The reader is likely to conclude that no more reasonable explanation has been offered.

In another article, Dr. Birdwood gives his reasons for believing that smallpox is a surface mycosis rather than a blood zymosis. It seems to us that the author evades the matter of the appearance of the eruption in the newborn.

Dr. W. Hale White demonstrates the fallacy of the belief that hydrochloric acid is a useful remedy in chlorosis. Like its predecessors, the report is most commendable, and one regrets that lack of space forbids further consideration of such valuable material. It is also to be regretted that Guy's Hospital Reports are not more generally seen on the shelves of our libraries. C. G. S.

MEDICO-LEGAL STUDIES. Vol. II. By CLARK BELL, Esq. New York: Press of H. F. Clinton, 1892.

THIS book is a continuation of some studies made by the author in 1889, and appearing, as he tells us in the preface of this work, in June of that year, entitled *Medico Legal Studies*, Volume I., for private circulation.

The book now before us, Volume II., is a history of the result of what has been done during the past two years in the science of medical jurisprudence through the efforts of the Medico-Legal Society of New York and its president, the author, Clark Bell, Esq.

The work consists of a collection of essays in which questions both of medical and legal significance are discussed. There are also added to the work copies of a number of reports made to the Medico-Legal Society on these subjects by committees appointed for the purpose, also several inaugural addresses by the president of the Society.

The topics treated of are many and varied, such as—Recent Judicial Departures in Insanity Cases; Belgium and Her Institutions for the Insane; Electricity and the Death Penalty; Monomania; Separate Hospitals for Insane Convicts; Hypnotism; Spiritualism and Testamentary Capacity; Insanity as a Defense in Pennsylvania; Lunacy Legislation in New York; The Coroner's Office — Should It be Abolished? Among the most important subjects of which the essays treat is the first one, namely, Recent Departures in Insanity Cases. The writer enters into the subject and discusses it at length. The essay appears to be a plea for better legislation in regard to the trial of lunatics in criminal cases. The ability, the writer says, to distinguish between right and wrong among criminals pleading insanity is not a fair test of their responsibility, and many insane are convicted and executed. Where there is any reason to suspect insanity an inquiry should be conducted before the trial by competent medical experts. Mr. Bell quotes in full the trial of two cases involving the question of insanity, reported from the highest courts of two of our States, in order to show the changes going on in the judicial mind in this country.

Another subject which is treated of at length is found in the essay on The Coroner's Office—Should It be Abolished? The writer recites the duties of a coroner, and states the features of the office existing in most of the States of this country at the present day. The Massachusetts Act of May 9, 1877, is quoted in full, in which the office of coroner is abolished, providing for medical examinations and inquests in cases of death by violence. The author calls attention to the fact that "whatever the verdict of the coroner's jury may be, the subsequent indictment, trial, and entire judicial proceeding is absolutely independent of it, and proceeds as if the coroner's jury had never acted

at all." This renders the proceeding, he says, a "useless" one. The work of investigation can be done much better and easier by competent medical experts.

The subject is treated intelligently, showing a thorough study of the question on the part of the writer, and is a strong argument in favor of the abolition of the coroner's office.

In the essay on Monomania the author suggests that the term "monomania" be dropped, from the fact that physicians say they never saw a case of insanity where the delusion was confined to any one subject, and that it is misleading in courts of justice. The paper, it seems, was prepared to call the attention of the Medico-Legal Society and the American Association of Medical Superintendents of Insane Asylums to the subject.

In the essay on Separate Hospitals for Insane Convicts, the writer states that he considers it an outrage to compel an insane person to associate with convicts, sane or insane, and says that none feel this more than the insane. Mr. Bell suggests that the National Government provide a place for the criminal insane, or that asylums be built by the larger States, who would receive the criminal insane from the other States at the expense of the States sending them.

In the essay on Hypnotism, Mr. Bell says the medical profession in America do not give the subject the attention its importance deserves, and judicial tribunals are wholly unprepared for the investigation of crimes committed through this influence.

In the essay on Insanity as a Defence in Pennsylvania, a paper written by the District Attorney of Philadelphia County on the subject is criticised.

In another essay he treats of Spiritualism and Testamentary Capacity, stating that if a testator should be controlled in the disposition of his estate by what he believed to be the spirit of a deceased person, it would be the duty of the court to investigate the medium, and if the medium or its family received the benefit of the legacies the element of fraud or undue influence might interfere.

In the essay on Electricity as a Death Penalty, Mr. Bell urges the removal of the scaffold and hangman's rope as a means of administering the death penalty to those convicted of murder, and quotes the reports of committees made to his Society, suggesting substitutes, such as death by electric current, death by hypodermatic or other injection of poison, or death by carbonic-oxide gas injected into a small room, as recommended by Professor Packard, of Philadelphia.

The other essays are on Belgium and Her Institutions for the Insane, showing the admirable way in which such institutions are conducted in that country, and on Lunacy Legislation in New York, recommending that that State have a Lunacy Commission similar to that in Pennsylvania.

The work on the whole is a good one, and offers to the professional man propositions worthy of serious thought, particularly to the lawyer, for the subjects treated of seem to require more the attention of the judge and the lawmaker than of the physician. The legal propositions appear to be accurately and correctly stated, and show careful investigation and study on the part of the author. He has evidently given the topics deep thought, and seems entirely familiar with them.

P. W. M.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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The Use of Hypnotism among the Insane.

Mr. George M. Robertson, having studied the subject with Bernheim, Luys, and Voisin, has made use of hynotism among the female pauper patients in the Morningside Asylum. He finds that the insane are difficult to hypnotize, but by selecting the most sensible and reasonable of the patients, and of those who are excited, only those who are still coherent, success is likely to follow in between one-third and one-half of the cases, without spending, on an average, more than a quarter of an hour over each. He has a decided objection to melancholiacs, except of the simple variety, as their subjective consciousness is so strong, and they are so wrapped up in their morbid ideas that, instead of listening to suggestion and becoming hypnotized, they think all the more of their subjective ideas. Even with cases who can be hypnotized one's success varies greatly, and in an unexpected manner they refuse to become hypnotized. Although most of his patients have gone under fairly deeply, and had no recollection of what happened, still one's control over them is not so strong as over a sane person, for, as their intelligence is not so good, they do not, as a rule, take up suggestions so well, nor do these make so great and lasting an impression upon them. The hypnotic sleep is also much shorter, on account of the morbid excitement from within the brain, arousing the patient, just as in the state of health we may also be awakened out of a normal sleep by a vivid dream. He summarizes its uses as a direct therapeutic agent: 1. In insomnia, succeeding in intractable cases when drugs have not succeeded well. Hypnotic sleep, being more closely allied to healthy sleep than is drugged sleep, must be of great service when the brain nutrition is already bad and the additional effect of depressing drugs is undesirable. 2. As a sedative in excitement, of direct therapeutic value in preventing an outburst of excitement from passing into

mania in a brain in a highly unstable condition. 3. To dispel fleeting delusional states and the minor psychoses by means of verbal suggestions in the hypnotic state, removing these lesser degrees of mental derangement. For the purposes of management it is useful: 1. To overcome the morbid resistance of patients for their own benefit, in making them do what is necessary for their own welfare, in the giving of medicines and the taking of food. 2. As a substitute for restraint in cases of excitement and violence, replacing the mechanical, physical, or chemical, by what may be described as mental restraint. It is, however, here uncertain, and not always possible. Naturally those who expect miracles to result from the employment of hypnotism will be disappointed. It is not believed that it can cure pronounced or advanced forms of mental disease, nor is the writer hopeful of its ever doing good in cases of fixed delusion. No person can reasonably deny the great good that it may do in individual cases, or the fact that in medical hands, legitimately employed with caution, it appears to produce no direct harm; yet even in an asylum, if extensively used, it may increase and strengthen the delusions about hypnotism, and about unseen agencies in general.—*Journal of Mental Disease*, 1893, No. 128, p. 1.

The Iodide of Strontium.

Dr. A. Malbec presents a very complete study of this remedy which appears likely to obtain an assured position in therapeutics. It occurs crystallized in hexagonal tables, very soluble in water, and, when impure, readily decomposing into iodine and oxide of strontium, presenting various colors. Purity and stability are essential, as the iodate is toxic. As the potash salt, the iodide of strontium has a manifest action upon the heart, which can be utilized in affections of the myocardium, in changes at the aortic orifice and in the arteries. It certainly can be used as a substitute for the potash salt, although it may not always be preferred to it. Yet it does not, after prolonged usage, give rise so readily to intolerance, and it will be more readily accepted by a patient suffering from cardiac disease if he should know of the use of the potash salt as a specific for syphilis. It can be prescribed the same way as the potash salt, in the same dose in simple solution in distilled water, or, to avoid the salty taste, in the sweet liqueurs, or in syrup, or that of bitter orange-peel.—*Les Nouveaux Remèdes*, 1892, No. 18, p. 424.

The Treatment of Inoperable Malignant Neoplasms by the Bichloride of Mercury in Oil.

Mr. R. Cowan Lees has used a solution of bichloride of mercury in olive oil in the strength of one to two thousand, injecting twenty minims by means of a hypodermatic syringe provided with a solid-pointed needle, having several orifices at the side of it, thereby allowing the mixture to diffuse through the tissue of the tumor and affording less danger of its being thrown into the circulation. The surface of the skin is previously cleansed with a solution of this oil, one to one thousand, with twelve per cent. of menthol. From his observation of three cases he believes that a powerful check, if not a complete remedy, exists in this method of applying the bichloride.—*The Lancet*, 1892, No. 3607, p. 875.

The Treatment of Hæmoptysis.

M. Comby recommends repose, such revulsives as dry cups, sinapisms, poultices of mustard and flaxseed, dry frictions, or with alcohol or the turpentines. For internal medication a pill of ergot, digitalis, and quinine, or ergotine in gooseberry syrup. Direct astringents may be found in subacetate of lead, or rhatany, or perchloride of iron by atomization. Acid draughts, as the sulphuric acid lemonade, are serviceable. The balsams have some reputation, and a combination of benzoin and alum in aqueous solution is of good repute. Opium has great value, but chiefly through its calmative effects.—*La Médecine Moderne*, 1892, No. 46, p. 705.

The Treatment of Cholera at St. Petersburg.

Drs. Frank Clemon and Richard Sisley have written a very readable paper upon the epidemic of 1892. The use of hot baths (twenty minutes, temperature, 104° F.) was found to be of the greatest service; these baths were frequently repeated, and their effect was to greatly improve the pulse and afford the patients a general sense of relief; and, according to Levin, their action on the skin was beneficial in warding off the uræmic coma. Many patients were treated with hot-air baths which could be given with less disturbance to the patient; higher temperature could be borne and they allowed freer action of the sweat-glands. Calomel was freely used; high rectal injections of a solution of tannin, one to two per cent., and in seven cases copious subcutaneous injections of fluid, seven parts of chloride of sodium to the thousand of water. This modification of Cantani's formula caused less pain than the original. The dejecta were all boiled in the special disinfecting apparatus, in closed boilers, by the external application of steam. At the Alexander Barrack Hospital the death-rate was about 27 per cent., and in the Obuchovski Hospital 28 to 29 per cent.—*The Medical Magazine*, 1892, No. 5, p. 471.

The Horse-nettle (Solanum Carolinense).

Dr. J. L. Napier has used a concentrated tincture of this plant, made by macerating for two weeks the crushed berries in equal parts of whiskey. The dose with which the remedy was begun was a tablespoonful three times a day. In a case of convulsions during pregnancy, these were completely controlled by a teaspoonful of a strong tincture given every three hours. It is not claimed that it will cure all cases of epilepsy, but that if it is intelligently given it will benefit all cases, and cure a large percentage.—*The American Therapist*, 1892, No. 6, p. 127.

Arsenic as a Prophylactic.

Mr. C. F. Bryan quotes Wilks, who calls this substance one of our most important drugs, and asserts that it is a preventive of gout. The tonic influence on the nervous system, and the belief held by arsenic eaters of Styria

that it prevents illness, the statement of Farquharson that it lessens the vulnerability of blood corpuscles, its antiseptic properties, that those who are taking arsenic are insusceptible to vaccination, are facts cited in support of the position assumed by the writer. His observations were limited to persons exposed to the infection of scarlet fever and diphtheria, and during the recent epidemic of influenza, and the results were such that use has been made of this remedy, wherever practicable, during the last ten years. He claims, in fine, that it is a perfect prophylactic in most infectious diseases. —*The Provincial Medical Journal*, 1893, No. 133, p. 9.

The Treatment of Tetanus.

Dr. L. H. Petit, recognizing the fact that fatal cases of tetanus are met with, in spite of scrupulous antiseptic precautions, corroborates the statement of Verneuil, that the microbe is one of the most insinuating and tenacious; and that of Chauvel, that investigation should be carried out from the standpoint of prophylaxis. The destruction of the focus can be secured by the excision of it, together with the surrounding healthy tissues, or by the amputation of the member above the focus. On the other hand, these measures may be undertaken too late to prevent invasion of the system, and amputation, and even chloroformization, may even precipitate an attack. The neutralization of the virus must be made either in the wound or in the organism. If in the former, cleansing the wound is essential. If in the latter, it is the antitoxines that must be resorted to; but this method does not show entirely convincing results. As the chronic form tends to recovery, remedies which change the acute into the chronic form are indicated. Of the remedies which diminish the morbid symptoms, chloral, in lowering the reflex excitability of the spinal cord, has given the most fortunate results, especially against the asphyxia and the syncope, which are the principal causes of death. This remedy must be administered in large doses, even to three and a half drachms daily, for several weeks. As for Calabar bean, atropine, morphine, cocaine, bromide of potassium, pilocarpine, and chloroform, these are only sedatives permitting the use of a smaller dose of chloral. When chloral has failed, success has been sometimes obtained by paraldehyde, urethane, and acetanilide. Salicylate of soda has been useful, without doubt due to its analgesic action; curare has been more harmful than useful. External medication, as baths, and the application of ice along the vertebral column, should be classed as sedative measures. As for the use of the antitoxine of Cattani and Tizzoni, it appears likely to fall into oblivion, and the question apparently resolves itself into the use of chloral internally and the application of ice along the vertebral column, although the latter may appear dangerous to those who fear every external excitation; and, in addition, absolute immobilization and protection against light and sound.—*L'Union Médicale*, 1892, No. 147, p. 853.

M. Verneuil, in the discussion at the French Academy of Medicine, pointed out that the modern experimental researches tend to show that the microbe of tetanus is confined for a more or less prolonged period in the point of entrance—the wound. The treatment consists, then, not in introducing into the wound an antidote, specific or not, of microbian origin or of

a chemical nature, but simply in suppressing the poison by taking away the organ which contains it—that is, amputation or excision of the wounded part. As a matter of fact, a removal of the focus, even if immediate, may not prevent the appearance of tetanus. BERGER, in seeking to give precise indication for the removal of the point of infection, points out that cases differ markedly. In some, when the focus is limited and complete, extirpation is possible—amputation giving better guarantee than excision pure and simple. Tetanus supervening shows that the infection was grave and rapid, and the resultant toxines had become early and widely diffused; here amputation is unavailing, but it appears, nevertheless, to be the most rational means at hand to destroy the point of infection as well as the laboratory where the toxines are manufactured. He criticises the reports of the cases treated by the method of Tizzoni, in that the injections of antitoxine had been employed in conjunction with other medication, as chloral, and with other means, such as amputation; and besides, the method had been employed several times in chronic cases, which of themselves tend toward recovery.—*Bulletin de l'Académie de Médecine*, 1992, No. 49, p. 771.

ON THE TREATMENT OF HICCOUGH.

MR. W. LANGFORD SYMES believes that little can be said. Empirical treatment has made use of almost every known drug. The author finds as most efficacious very frequent acts of swallowing raw whiskey, vinegar, "Eau de Mélisse," hot brandy punch, or a mustard blister over the epigastrium. Antispasmodic remedies comprise chloral hydrate—used with success in the case reported; nitrite of amyl, Calabar bean, cocaine, hydrocyanic acid, atropine, morphine, and nicotine. The physiological treatment depends upon an accurate diagnosis of the conditions under which it occurs, of the constitution in which it is met with, and of the probable nature of the irritation to which the gastric or œsophageal branches of the vagus are subjected—as foreign bodies, accumulations, distention, worms; or specific states of the viscera, such as gout, etc.—each of which must, in turn, become the basis of a distinct and specific treatment.—*The Dublin Journal of Medical Sciences*, 1892, No. 252, p. 488.

[In a patient under observation in hospital service, where nearly every drug recognized as having an anti-spasmodic action had been used in vain, digital compression of the phrenic immediately arrested the paroxysms for nearly two hours; the repetition of the compression caused them to cease entirely.—R. W. W.].

THE TREATMENT OF TUBERCULOSIS BY HYPODERMATIC INJECTIONS OF CREASOTE.

PROFESSOR PETER believes that the hypodermatic injections act favorably only in local scrofula and tuberculosis—that is, precisely in the cases where the older therapeusis was also efficacious. He cites a case where a patient suffering from both a pulmonary tuberculosis and a cold thoracic abscess was treated for thirty days. The amount of five drachms cured the cold abscess and bony lesion, but left stationary the pulmonary disease. The

hypodermatic treatment of creasote is a real advance: it enables the patient to absorb large quantities of the remedy, and diminishes markedly and rapidly the expectoration, the cough, and various general symptoms. Certain cases of tuberculosis are curable, and that without treatment; for example, laborers, who have become tuberculous from overwork and insufficient nourishment, recover after a stay in a hospital; therefore we need not be surprised that creasote will relieve these individuals. According to the tolerance established for creasote, the prognosis can be stated. If this is perfect, we may expect excellent local and general results. Another class is: patients with whom tolerance is also perfect, but in whom the local lesions are as much benefited as the general conditions. A third class of patients bear the remedy well at first, but later intolerance is established; here the prognosis is unfavorable. Those who, from the first, are unable to take the remedy, present a very hopeless prognosis. Thus creasote may show the gravity of the tuberculosis. However, much depends, as to the duration of the disease, upon good digestion and absence of fever, and with these conditions in the patient's favor his life can be assured in spite of the most evident signs of pulmonary tuberculosis.—*La Médecine Moderne*, 1892, No. 54, p. 802.

Pneumonia Cured by the Intra-venous Injection of Chloride and Bicarbonate of Soda.

Dott. Pellegrini reports a second case where about seven ounces of a three-fourths of a 1 per cent. solution of chloride of sodium with a one-half of 1 per cent. of bicarbonate of sodium was injected intra-venously. This was repeated on the next day. The urinary chlorides, diminished before the injections, increased in amount and returned to the normal on the third day after the second injection. The theory upon which this artificial blood-serum is used is, to prevent the danger of the pneumonia—the coagulation of blood in the cavity of ventricles, due to the scarcity of chloride of soda in the organism, shown by the diminution or absence of the chloride in the urine.—*Gazetta degli Ospitali*, 1892, No. 151, p. 1387.

Dangers of Inhalation of Smoke Powders in the Treatment of Asthma.

Dr. J. H. Bullard calls attention to the silence of the text-books in regard to the danger arising from the use of these powders, which are generally composed of nitre with the addition of chlorate of potassium, powdered stramonium leaves, cubebs, sumbul, benzoin, oil of cassia, lobelia, and perhaps tobacco. It is possible to produce with these an atmosphere so full of narcotic vapors, and so lacking in necessary oxygen, as to produce a gradual asphyxiation, passing into that easy and painless moribund condition oftener seen in poisoning from carbonic acid or illuminating gas. A single fatal case under the observation of the writer is reported. A strong, healthy, hard-working German woman, of thirty-six years of age, died from the inhalation of the fumes, the room being closed; the symptoms were those of asphyxia, which were not relieved by artificial respiration, venesection, strychnine hypodermatically, electricity, external warmth, or frictions.—*The Southern California Practitioner*, 1892, No. 12, p. 471.

The Medical Uses of Compressed Gases.

Dr. Clement B. Lowe cites the uses of oxygen and of nitrogen monoxide. The former produces gain in body weight through the stimulating effects upon the nutrient functions, these effects produced mainly by the increase and stimulation of the red corpuscles, being almost invaluable in asphyxia from poisonous gases, such as carbon monoxide, where the hæmoglobin is at once changed to oxyhæmoglobin. The latter, used largely in dentistry, has recently been shown to be of value in the treatment of nervous diseases, particularly in nervous prostration, insomnia, and melancholia. Since it is now possible to procure the gases in compressed form, they can be kept in stock by pharmacists. In using the apparatus the compressed gas is first conducted into a rubber bag or a metallic gas-receiver, from the former of which it is inhaled under ordinary pressure, the gas passing through a bottle partly filled with water. If it is to be used as an enema, the gas is displaced from the receiver by water flowing from a can placed about twenty-two inches above the receiver, and is passed through a bottle, containing warm water, to the patient.—*American Journal of Pharmacy*, 1892, No, 12, p. 603.

The Treatment of Cardiac Affections by Gymnastics and Massage.

Dr. H. Huchard considers that too much attention has been directed to the central heart and not enough to the peripheral heart. This is true of the diseases of the heart of arterial origin when the obstacle is not in the central heart, but in the peripheral heart—that is, in the circulatory system. There are two methods in gymnastics—the French and the Swedish; the former has, in health, for its purpose the development of muscle; the latter, in both health and disease, the aiding of suppleness, and especially of the circulation of the muscular system. The latter is really medical gymnastics, improving the peripheral heart. Exercises which dilate the peripheral bloodvessels relieve the heart. From massage and gentle gymnastics in the treatment of cardiac disease of arterial origin we may expect that the patients will lose their cyanosis, their dyspnœa, their œdema of the limbs, while the pulse gains in regularity and force, and the urine becomes abundant and clear.—*Revue générale de Clinique et de Thérapeutique*, 1892, No. 47, p. 741.

The Treatment of Hypertrophic Cirrhosis of the Liver by Calomel.

Dr. Ludwig Sior reports a case where he prescribed a grain in single doses, six times daily, at intervals of two hours, continuing thus for three days, when the remedy was omitted for the same number of days; this alternation of periods of use and disuse of the remedy was continued for a month. For the second and third month four daily doses were given, in the same manner as before. In the case reported, cure resulted after about three months of treatment.—*Berliner klinische Wochenschrift*, 1892, No. 52, S. 1327.

MEDICINE.

UNDER THE CHARGE OF

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Sequel to a Case of Tuberculous Peritonitis.

Mr. Lawford Knaggs (Leeds), before the Clinical Society of London, described the appearances noted at an operation for ventral hernia five and a half years after laparotomy had been performed for tuberculous peritonitis. The case had been recorded in the Clinical Society's *Transactions* (vol. xxi.), and at the first operation the intestines, mesentery, and parietal peritoneum were covered with myriads of pale-pink, gelatinous-looking tubercles, as large as hemp-seeds, thickly and universally distributed. The patient, who had grown into a strong and healthy young woman, reappeared in October, 1891, with an irreducible omental hernia at the site of the abdominal incision. This was successfully operated upon in November. The sac and contained omentum presented nothing unusual in appearance. The omentum that prolapsed through the hernial aperture during the operation was quite healthy. The parietal peritoneum inside the ring felt quite smooth to the finger, and a coil of small intestine, which could be well seen through the opening, was glossy and looked like perfectly healthy bowel. No signs of tubercle nor any evidence of the tuberculous condition that had existed five and a half years ago were detected.

Dr. Hadden (London) mentioned the result of a post-mortem examination in a child whose abdomen had been opened two months before death and found affected with miliary tubercle. No trace of this condition was found at the necropsy, and the glands were not enlarged or caseous.

Tuberculous Ulceration of the Pharynx.

At a recent meeting of the Medical Society of London, Dr. Percy Kidd showed a case of severe tuberculous ulceration of the pharynx, which had been successfully treated by lactic acid. The patient, a woman aged forty-one years, at the present time showed a large cicatrix on the back of the pharynx; there were still a few small nodules at the site of the scar and at the back of the tongue. She presented signs of pulmonary tubercle at the beginning of the year, and later the throat trouble commenced. Before treatment was begun there was diffuse ulceration of the whole of the back of the pharynx, the surface being pale and gray, dotted with bright-red points like tubercles

and coated with a tenacious secretion. It was intensely painful, swallowing being almost impossible. The surface was thoroughly cocainized and lactic acid was freely applied, first in a solution of 50 per cent., afterward the pure acid being used. It was only after fourteen applications that evidence of healing was observed; then the pain soon ceased and the improvement rapidly advanced. The most favorable case for this treatment was an ulcer without thickening of the submucous tissue. If there were induration not broken down, the surface should be touched with the cautery and the acid then rubbed in. Great patience and perseverance were necessary to produce good results. The ulcer had not been examined for bacilli, though they were found in the sputum. He had seen four cases cured by the lactic acid treatment, and he referred to one case of undoubted tuberculous ulceration in which a spontaneous cure took place.

On the Knee-jerks and Peripheral Neuritis in Diabetes.

R. T. Williamson (Manchester) publishes an analysis of fifty cases. Both knee-jerks absent in 50 per cent.; both knee-jerks present in 38 per cent.; knee jerks feeble, or one absent, in 12 per cent. The state of the reflex varied, returning again after a period of absence in several cases.

Relation to age. Under twenty-five years, knee-jerks absent in 80 per cent.; under thirty years, absent in 75 per cent.; over thirty years, absent in 46.15 per cent. The severer type of the disease in the young is probably accountable for the high percentage of absence of knee-jerk under twenty-five years. The absence of knee-jerk does not appear to bear any relation to the duration of the disease.

Relation to general nutrition. Absence of knee-jerk appears to be more frequent in markedly wasted patients. No relation to the perchloride of iron reaction in the urine (Gerhardt's reaction) could be made out; nor did there appear to be any relation to the amount of sugar passed or to the specific gravity of the urine.

Relation to pathological conditions. "The loss of the tendon reflex cannot be regarded as evidence of the nervous origin of the disease in any particular case, but must be looked upon simply as a complication. In a case of diabetes presenting symptoms of gross lesion of the nervous system, the knee-jerks were present (see *Lancet*, July 9, 1892).

"In another case of mild diabetes, in which a tumor of the pituitary body was found post-mortem, the knee-jerks were present. On the other hand, they were absent in a case following a blow on the head, and in cases having a previous history of great mental worry. The knee-jerks were absent in three cases in which the autopsy revealed marked disease of the pancreas."

Relation of absent knee-jerks to symptoms of neuritis. Out of 12 cases, in 8 there were more or less pain, tenderness, numbness and cramps in the legs; in 4, such symptoms (of neuritis) were entirely absent.

In 2 of the above-mentioned 8 there were marked paralytic symptoms. Of 10 patients whose knee-jerks were present, only 1 suffered from the above symptoms.

In presence of the above symptoms, loss of knee-jerk is probably due to

neuritis; in other cases the cause of its absence is more doubtful, though Charcot believes it to be also due to peripheral neuritis.

In cases in which the knee-jerks were absent during life, examination of the spinal cord has yielded negative results. Eichhorst has recently reported two cases of diabetes with absent knee-jerks in which he found parenchymatous neuritis of the anterior crural nerves.

In some cases the loss of knee-jerk is adequately explained by positive pathological evidence, but in others the clinical facts appear to support the view of a toxic functional cause (probably a condition preceding neuritis).

Prognosis. On the whole, this appears to be less favorable when the knee-jerks are absent.

The author concludes his report with a short account of two cases of diabetes presenting slight symptoms of peripheral neuritis, with a *résumé* of an analysis of sixteen cases by various authors.—*Medical Chronicle*, 1893, vol. xvii., No. 2.

Pancreatitis with Hemorrhage.

Day (*Boston Medical and Surgical Journal*, cxxvii., No. 24, p. 569) reports the case of a medical man, forty-nine years old, who for a long time had been troubled with digestive derangement, which of late years had been aggravated by irregularity of hours of sleep and of meals. Three years before death he was, on one occasion, seized suddenly with an attack of syncope, for twelve hours remaining in a condition of collapse, and gradually recovering after several weeks of debility. For a year his condition had been growing progressively worse, though he continued at his work, using "stimulants" to induce sleep. For a number of months there had been complaint of a feeling of pain and distress in the epigastrium, for the relief of which chloroform was employed topically and sometimes by inhalation. Finally, the man concluded to withdraw from active life and take much-needed rest. Uncontrolable vomiting of undigested food, greenish liquid, and a small quantity of mucus, with violent retching, set in at this time, but at no time was there hæmatemesis. Exquisite tenderness developed in the epigastrium and deep pressure could not be tolerated at all. There was complaint of agonizing pain in the epigastrium and in the right hypochondrium. For a number of months there had been tenderness over the lower ribs upon the right side posteriorly. There was progressive failure, mentally and physically. Much of the time there was delirium. Exertion induced syncope. The pulse, usually abnormally slow, became quick and weak. At no time was there noteworthy elevation of temperature. The bowels were habitually constipated and purgatives were often employed. The stools were at times clay-colored; at other times they presented evidences of the presence of bile. At one time there was decided jaundice, which disappeared after the administration of calomel. Much of the time the conjunctivæ and the skin were muddy. Sweet or sour substances were not tolerated. Vomiting was controlled by the employment of suppositories containing tincture of opium. Slight transient improvement took place. Finally, vomiting and retching suddenly set in, with epigastric pain; collapse occurred and progressed to death.

At the post-mortem examination the stomach appeared to be enlarged; its

walls were thinned; the mucous membrane was injected and was covered with a small amount of mucus. The gall-bladder contained a small concretion of inspissated bile; two other stones were lodged firmly at the duodenal extremity of the common duct, the lumen of which they almost but not quite completely occupied. The head of the pancreas was, perhaps, slightly more dense than usual. The body and tail were enlarged in all dimensions, and abnormally hard and dense, a light chocolate-colored fluid exuding from the surface. The color of the body and tail approached chocolate. On the surface were many dark areas, more or less irregularly round, and from one-half to three-fourths of an inch or more in diameter, on section proving to be conical in shape, and in color and appearance suggestive of altered blood. There were, besides, many smaller, hard and dense, light-gray nodules. The pancreas was submitted to Professors Fitz and Whitney, of the Harvard Medical School, both of whom regarded the condition as one of hemorrhagic infiltration.

The most common prominent symptom of pancreatitis is deep-seated pain in the upper part of the abdomen, radiating upward and backward, often intense and of sudden onset, and sometimes attended with nausea, vomiting, and retching. There is usually little or no elevation of temperature. Emaciation is often extreme. There may, besides, be pallor, restlessness, thirst, rapidity and compressibility of pulse, and heavily coated tongue. When hemorrhage occurs, the symptoms are those of sudden collapse, rapidly progressing to a fatal termination. The condition is to be differentiated from peritonitis from perforation; irritant poisoning; intestinal obstruction.

Pancreatitis may result in suppuration or gangrene.

Recovery may take place, but attacks are likely to recur.

The treatment is as yet palliative. Should suppuration occur, the pus is to be evacuated.

Fitz (*Ibid.*, p. 571) maintains that the multiple at-necrosis frequently found in association with hemorrhagic and gangrenous pancreatitis is secondary to the latter, and suggests the possibility of a decomposition of the neutral fat in the cells into the fatty acids, which combine with lime to form the crystals found in the necrotic nodules.

Noyes (*Ibid.*, p. 572) states that the appearance of fat in the alvine dejections is a valuable sign of pancreatic disease, both in cases in which constipation exists as well as in those in which there is diarrhœa. The amount of fat appearing in the dejections may exceed that which has been ingested; it is said even that oleaginous material has continued to appear in the stools after all fatty matter had been excluded from the diet. An inability to digest oleaginous, saccharine, and amylaceous articles of food should suggest pancreatic disease. Free fat occasionally appears in the urine in case of disease of the pancreas. In a certain proportion of cases of pancreatic disease sugar appears in the urine.

Primary Carcinoma of the Common Choledoch Duct.

May (*Münchener medicin. Wochenschr.*, 1892, No. 33, p. 590) has recorded a case of primary carcinoma of the common choledoch duct, with secondary miliary nodules in the liver. He was able to find reports of but nine other

similar cases. The patient, an official, sixty-seven years old, gave a history of having suffered from attacks of "renal" colic. He had been an eager sportsman and able to endure a good deal of physical exercise. Following an attack of influenza the man had cough and catarrhal symptoms, with paroxysms of shortness of breath, particularly at night. He was a hearty eater and indulged with moderate freedom in malt liquors. The bowels were rather torpid. Several months later slight jaundice appeared. The heart was found enlarged; its action was irregular; the pulse was arrhythmic, small, and compressible; the radial vessels were slightly atheromatous. The urine was scanty, of high specific gravity, and contained neither albumin nor sugar. The spleen was not enlarged. The area of hepatic percussion-dulness and the sense of resistance were somewhat increased. Powdered digitalis leaves, gr. $\frac{3}{4}$ thrice daily, were prescribed. In the course of the next few days signs of hemorrhagic infarction at the base of the right lung appeared. The dose of digitalis leaves was increased to gr. jss, with decided amelioration of the symptoms.

In the next few months strophanthus was given alternately with the digitalis, and there was little change in the man's condition. Some time later progressive impairment of appetite set in, until there was actually digust for food, particularly for meat. At the same time there was notable loss of flesh and strength. The enlargement of the liver was found to have increased, and the jaundice had grown more intense. The urine contained conspicuous amounts of biliary coloring-matter, and the stools were clay-colored and offensive. Dyspnœa returned and insomnia was troublesome. There was no tenderness in the right hypochondrium, neither spontaneously nor upon pressure. Some relief was afforded by the employment of digitalis and the institution of mechano-therapeutic measures. A sense of chilliness was readily induced, with slight elevation of temperature. Emaciation progressed; jaundice persisted. To the other symptoms general anasarca became added. Sopor developed; Cheyne-Stokes breathing appeared; slight tenderness in the right hypochondrium became evident. Finally, intense abdominal pain suddenly occurred, with vomiting of dark-colored matter; the abdomen became distended and extremely sensitive; the temperature was elevated; and progressive collapse was followed by death. The post-mortem findings included an annular growth, as large as a cherry, at the entrance of and occluding the common choledoch duct at its entrance into the duodenum, partially projecting into the bowel, and on microscopic examination proving to be a cylindric-celled carcinoma. The biliary passages were dilated and contained gall-stones, which had caused ulcerative perforation of the gall-bladder, with purulent peritonitis. The liver contained a moderate number of metastatic nodules.

In none of the cases of primary carcinoma of the common choledoch duct reported was the diagnosis made during life. In most the duration of the disease was from four to eight months, and death resulted from intercurrent pneumonia. Seven of ten cases occurred in males; two in females; in one the sex was not mentioned. In all cases the most prominent symptoms were persistent, intense jaundice; rapid loss of strength, without apparent cause; and obstinate digestive derangement. In one case the patient was forty-three years old; in all of the others the patients had passed the fiftieth year. Cheyne-

Stokes breathing, sopor, and other cerebral symptoms are to be ascribed to cerebral œdema.

A Gas-generating Bacillus in the Urine of a Case of Cystitis.

Having observed a peculiar sulphurous odor about the urine of a case of compression-myelitis, with incontinence of urine and cystitis, Schow (*Centralbl. f. Bakteriol. u. Parasitenk.*, xii., 21, p. 745) made a careful study of the secretion. The urine was feebly acid, rather turbid, and deposited a moderate sediment, which consisted of vesical epithelium, colorless blood-corpuscles, and bacteria. A small quantity of the urine, obtained with suitable precautions, was mixed with some meat-infusion peptone-gelatin, and plates were cast. Three varieties of colonies developed, of which two proved to be identical. One of these gave rise to the production of gas. The organisms were short, plump, motile rods, in appearance somewhat resembling both bacilli and cocci and stained with the ordinary aniline colors, and were not decolorized when treated by the method of Gram. They developed also upon agar-agar, upon potatoes, upon coagulated egg-albumen, in bouillon, and in sterile urine. A peculiar aromatic odor was apparent in most of the cultures. In the urine it was evident that alkali was produced as a result of the growth of the organism. From an analysis of the gas generated the conclusion is reached that it was carbon dioxide. After the patient had been subjected to an antiseptic plan of treatment the cystitis subsided and the bacilli could no longer be found. Injection of an infusion of the bacilli into the bladder of a dog, with temporary ligature of the urethra, was followed by the development of cystitis, the bacilli being also found in the urine. The name coccobacillus aërogenes vesicæ is proposed for the organism.

Tubercle-bacilli in the Lymphatic Glands of Non-tuberculous Persons.

To ascertain if tubercle-bacilli were present in the lymphatic glands of non-tuberculous persons, Pizzini (*Zeitschr. f. klin. Medicin*, xxi, 3 u. 4, p. 329) inoculated guinea-pigs, some through the peritoneum, and some through the subcutaneous connective tissue, with portions of the bronchial, mesenteric, or cervical glands obtained from forty subjects in which death had occurred from acute disease, or as the result of accident, and from which tuberculosis could be certainly excluded. As a matter of course, the most scrupulous attention was paid to antiseptic detail, and the avoidance of all sources of contamination. For various reasons only the results obtained in thirty of the subjects were considered available. It was found that in 42 per cent. of cases tubercle-bacilli were present in the lymphatic glands. This observation is assumed to prove that, under certain circumstances, the tubercle-bacilli, after having passed the epithelial lining of the air-passages, are destroyed by the phagocytes; under other circumstances the bacilli give rise to primary tuberculosis of the lymphatic glands, which subsequently becomes generalized; while in most cases the bacilli remain quiescent in the glands, especially in the bronchial glands, preserving, however, their virulence. The special proclivity of the bronchial glands is probably dependent upon the fact that tuberculous infection most commonly takes place by the air-passages, and upon the

situation and the anatomic and physiologic relations of the bronchial glands. In no case was the presence of tubercle bacilli in the mesenteric glands demonstrated. In two cases tubercle bacilli were found in the Pacchionian bodies. It is also concluded that too much stress is not to be laid upon the sources of tuberculous infection, but more upon the resistance of the tissues. The greatest importance is attached to the condition of the blood, for if this become deteriorated the conditions are rendered more favorable for the multiplication of the bacilli already present in the glands, to be followed in turn by general infection.

Arterial Thrombosis following Influenza.

Leyden (*Deutsche medicin. Wochenschr.*, 1892, No. 45, p. 1009) has reported the case of a girl, twenty years old, in which, four weeks after an attack of influenza that kept the patient in bed a week, a suppurating angina appeared. A week later, in the morning on arising, she felt a sharp pain in the left hand, which toward evening was observed to be pale. In the course of a few days, the pallor had given way to cyanosis, with which was associated a sense of coldness and weakness. The discoloration extended to the forearm and to the lower third of the arm, and swelling became superadded. There was some pain and some retardation and enfeeblement of movement. There appeared to be slight hyperæsthesia. It was found that the left radial pulse was absent at the wrist; neither could pulsation be felt below the middle third of the arm; while below, a cord-like mass could be made out. On physical examination no lesion of any organ could be detected. The urine contained neither albumin nor sugar. There was an absence of febrile symptoms. The family and personal history was good. For several days the thrombosis extended and the symptoms became more pronounced; but subsequently the conditions moderated, until perfect recovery finally ensued, the occlusion of the brachial artery, however, persisting and a collateral circulation being established.

A second case is reported as having occurred in a medical man, fifty years old. Shortly after an attack of influenza, symptoms of occlusion of the popliteal artery appeared, for the relief of which amputation became necessary. After a protracted convalescence, retarded by numerous complications, the patient ultimately recovered. In this case also there was no cardiac lesion, and the family and personal history was good.

Leyden is unwilling to admit that these two cases are instances of marantic thrombi. He would prefer to believe that the condition is to be associated with a breaking down of the colorless blood-corpuscles that takes place during the febrile stage of the disease and later.

Reference is made to other cases of a similar character.

Diminution in the Size of the Liver (Acute Yellow Atrophy) without Diminution in the Area of Hepatic Percussion-dulness.

Gerhardt (*Zeitschrift f. klin. Medicin*, xxi., 3 u. 4, p. 375) has reported the case of a woman, thirty-one years old, who had had scarlatina in childhood, but no other disease. For a number of years there had been complaint of

gastric derangement, loss of appetite, and nausea. Without known cause the woman was overtaken by weakness and compelled to go to bed; and jaundice developed. Vomiting of undigested food took place. The urine contained bilifulvin, biliary acids, hyaline tube-casts, and bile-stained renal epithelial cells; on heating and evaporating a large quantity of crystals of tyrosin and of urea could be demonstrated. The stools were pale. The red blood-corpuscles at once assumed the form of thorn-apples and displayed no tendency to group in rouleaux. The colorless corpuscles were somewhat increased, but did not present the polynuclear form. Glycerin-agar inoculated with the blood remained sterile. The abdomen was somewhat distended. The area of hepatic percussion-dulness was not altered, and remained unchanged. The spleen was not palpable, and manipulation occasioned no pain. The sensorium became dulled; the patient became delirious; a systolic murmur became evident at the apex of the heart; a coarse macular eruption covered the body, except on the face; the patient grew worse, and death ensued. At the post-mortem examination fatty degeneration of the muscular tissue of the heart was found; there was parenchymatous nephritis and chronic perimetritis. The liver was in places adherent to the diaphragm; the organ was diminished in size, and weighed less than two pounds, it was soft, and its capsule was cloudy; the parenchyma was of a yellowish color. The diagnosis was acute yellow atrophy. It could not be definitely learned that the woman had taken phosphorus or other poison, but it was suspected that she had swallowed the heads of matches. The failure of correspondence between the results of percussion and the actual size of the liver is explained by the fact that ordinarily, in cases of acute yellow atrophy of the liver, the organ becomes soft, and falls to the posterior portions of the abdomen, the bowel taking the place of the liver. This condition was prevented in the present instance by the adhesions that had formed between the liver and the diaphragm. Under other circumstances the area of hepatic percussion-dulness may be diminished in consequence of the colon taking a position in front of and above the liver.

Suppurative Pyelophlebitis following Appendicitis.

At a recent meeting of the Berlin Medical Society, Ewald (*Deutsche medicin. Wochenschr.*, 1892, No. 45, p. 1019) reported the case of a man, twenty-six years old, who for three weeks had presented headache, diarrhœa, eructations, and vomiting. The appearance was cachectic and the spleen was enlarged, but there was no other symptom of enteric fever. Physical exploration disclosed no affection of heart or lungs. The evening temperature reached 104° F.; the morning temperature fell below normal. Plasmodia malariæ were not found in the blood. On the fifth day the epigastrium became sensitive and the liver enlarged. A rigor occurred; the abdomen became distended; and pain at the shoulder-blades was complained of. No tumor of the liver could be detected. There was no jaundice. Tuberculosis was excluded by the absence of pulmonary involvement, of diffuse abdominal pains, of enlarged lymphatic glands, and by the character of the stools. The increase in the size of the liver, together with the localized painfulness, pointed to abscess of the liver; and the development of ascites constituted evidence of

interference with the portal circulation. Repeated puncture of the liver, however, failed to reveal the presence of pus; neither was there anything in the history that could be made responsible for the formation of an abscess of the liver. At the post-mortem examination a perityphlitic abscess was found, in the midst of which the perforated vermiform appendix was present. From the abscess and through the superior mesenteric vein a suppurative phlebitis had been transmitted to the portal vein in the transverse fissure of the liver. The spleen was enlarged. It was apparent that the pyelophlebitis had not developed immediately after the perityphlitis, but that the two processes had been separated by a considerable interval of time.

A Case of Chronic Interstitial Pancreatitis.

Rosenthal (*Zeitschr. f. klin. Medicin.*, xxi., 3 u. 4, p. 401) has reported the case of a girl, sixteen and a half years old, without hereditary predisposition or previous acute illness, who, for a year, had been anæmic. More recently there had been notable wasting. Attacks of weakness, with syncope, were frequent, and diarrhœa occurred from time to time. It was stated that the skin was sometimes yellow. The abdomen became enlarged; the frequency of breathing increased; the pulse accelerated; the temperature was 100° F. There was diffuse bronchitis. The heart presented no lesion. The urine was normal. The area of hepatic percussion-dulness was increased. The abdominal veins were enlarged, and there was evidence of the presence of a considerable effusion in the peritoneal cavity. Jaundice was absent. The spleen was not enlarged. On five different occasions it became necessary to perform paracentesis abdominis, large quantities of fluid being evacuated, the accumulation, however, rapidly recurring. Œdema of the lower extremities developed, and eventually the patient died. Throughout the illness there had been practically no fever. The pulse had been small and frequent. While under observation the skin assumed a yellowish color. Rapid emaciation was a notable feature. There was especial complaint of headache and abdominal pain. At the post-mortem examination a moderate accumulation of fluid was found in the peritoneal cavity. The head of the pancreas was unduly firm, and on microscopic examination presented an increase in the interstitial connective tissue, with accumulations of round cells in dilated lymphatics. In the neighborhood of the head of the pancreas the portal vein was partially thrombotic. The liver was enlarged, firm, and smooth. The central veins of the lobules were occluded by thrombi, and the adjacent cells had undergone atrophy. At the base of the right lung were a few areas of broncho-pneumonia. The kidneys presented no change. The heart was small, the right ventricle dilated; the muscular structure was pale and brown; the valves and orifices were free and competent. There was no disease of the lymphatic glands, and nowhere could a neoplasm be found. Although no history of syphilis could be obtained, the absence of any other possible cause of the changes in the pancreas, and the presence in the organ of the evidences of proliferating lymphangitis lead to the conclusion that the morbid complexus was dependent upon late congenital syphilis.

SURGERY.

UNDER THE CHARGE OF

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THE NECROSIS OF FATTY TISSUE AFTER SURGICAL OPERATIONS.

PITSCHKE (*Centralblatt für Chir.*, 1892, No. 43) reports two cases in which, after excision of the shoulder joint, fistulæ persisted; and after the patients had been allowed the use of their arms, there was necrosis of the fatty tissue of the axillary region. The discharged masses of fat were of normal consistence and appearance; there was no change apparent on microscopical examination, except that the bloodvessels were empty. In neither case was there bone-necrosis, but one small splinter being discharged. The author believes that this must be called a true necrosis, caused by mechanical irritation and anæmia. A thermic origin was untenable. Possibly there was a chemical cause through the entrance of air into the wound. There was an absolute increase over the normal amount of fatty tissue in the region, in the case of the first patient, which probably indicates a new growth during the periods of quiescence. The chief lesson to be drawn from these cases by the surgeon is, that in all cases fatty tissue that has been crushed or irritated during operation should be removed, and that this form of necrosis may be the cause of persistent fistulæ.

ERYSIPELAS OF THE BLADDER.

V. FRISCH (*Internat. klin. Rundschau*, October, 1892, No. 44) reports the following interesting case, in a patient fifty-two years old, whom he had had under observation and treatment in successive attacks of abscess in the prostate for some time. The patient entered the hospital with one of his usual attacks, but after its symptoms had disappeared there remained a fever that could only be accounted for by the presence of pus, albumin, and a few streptococci in the urine, while the prostate and bladder were sensitive to pressure. Upon the third day, after a severe chill, there appeared upon the left leg a spot the size of an almond, which presented the characteristics of an erysipelatous eruption, and caused the author to conclude that he had to deal with an erysipelas of the vesical mucous membrane, originating in or caused by the abscess of the prostate. This diagnosis was confirmed by the bacteriological investigation of the urine, the streptococci of erysipelas being recog-

nized both in the plate-cultures and by their characteristic growth in the "stick" cultures, and by their reproducing the disease after inoculation.

These bacteriological evidences in the urine increased and then disappeared with the course and termination of the disease in the bladder. The cystoscope showed the mucous membrane deeply red in color, and raised in great folds over its entire surface during the height of the disease. The skin eruption was metastatic—probably through the bloodvessels; this was shown by its origin on the lower leg, far from the original seat of the disease, and by its second appearance on the chest, after having passed over the entire posterior surface of the body and apparently subsided. The patient made a good recovery.

The Prevention of Intestinal Adhesions after Laparotomies.

The frequent and rapidly multiplying cases in which adhesions after laparotomy have led to enteritis and even stricture of the intestine, leads V. Frey (*Wiener klin. Woch.*, October 27, 1892, No. 43) to advise that in all cases of wounds of the peritoneum special care should be taken to close them, and, leaving out of consideration those wounds to which the ordinary plastic methods are applicable, he suggests the following method for the closure of wounds in the parietal peritoneum: The peritoneum on one side of the laceration is dissected up sufficiently to allow its union with the sound peritoneum on the opposite side, where it is fixed with interrupted sutures; in case this occurs at the site of the primary incision, the dissection should be made on the sound side, this "leaf, as of a book," being sutured to the opposite side, beyond the point of laceration.

A Case of Gastro-enterostomy.

Reclus reports in *Le Mercredi Médical*, 1892, No. 42, a successful case of gastro-enterostomy in a case of cancer of the pylorus. The patient was a woman, aged fifty-one years. The first symptoms of her trouble manifested themselves nine months before coming under the observation of the author. Examination revealed a large tumor in the abdomen to the right of the median line. Vomiting occurred two or three hours after taking food. The stomach was greatly dilated; almost nothing passed from the bowel. There were extreme emaciation and feebleness, and death seemed imminent. In spite of the unfavorable outlook, anastomosis between the stomach and jejunum was performed. Improvement was rapid after the third day, and two months later the patient remained free from symptoms. She ate heartily and the bowels were moved regularly.

On account of the excessive vomiting following the chloroform anæsthesia, the author will in future cases use cocaine for the abdominal incision, after which no pain would be experienced. In three gastrotomies the local use of cocaine was entirely satisfactory.

The additional anastomosis between the duodenum and jejunum, as recommended by Jaboulay, the author considers useless and dangerous. Of nine cases of gastro-enterostomy performed in France the early part of this year, eight recovered. These statistics have placed the operation in greater favor than it formerly enjoyed.

Lateral Deviations of the Spine in Pott's Disease which may Simulate Scoliosis.

Kirmisson states (*Revue d'Orthopédie*, 1892, No. 6) that the possibility of lateral curvature of the spine in Pott's disease is too generally overlooked. Of one hundred and twenty-three cases of this disease examined by him, in eighteen instances there was associated with the angular deformity more or less lateral deviation, while in six other cases of well-marked caries the lateral deformity existed without any angular curvature. Thus in nearly one-fifth of the cases there was lateral curvature, either separate or combined with the classical angular projection.

Cases presenting the antero-posterior deformity are usually diagnosticated without difficulty, but where the lateral curve only exists great care is to be observed in eliciting all the features of the affection. There is not apt to be pain in scoliosis, therefore marked sensibility to pressure on the spinous processes would argue for Pott's disease. We have seen rapid increase in the deformity in the latter affection, in five or six weeks; this does not occur in scoliosis. The pronounced inclinations of the trunk are due to contraction of the lumbar muscles, which does not occur in idiopathic lateral curvature. When enormous lateral deviations are observed in addition to other signs of spine disease, the iliac fossæ should be palpated in order to determine whether or not an abscess has formed. Torsion is associated with scoliosis, while the inclination of the trunk *en masse* is especially characteristic of Pott's disease.

Therapeutically Kirmisson has noted, in common with other observers, that the lateral deviation in disease of the spine has a greater tendency than the other form to improve or entirely to disappear under horizontal decubitus. Vertical extension only exaggerates the muscular contraction. If jackets are employed, they should be applied while the patient is in the genu-pectoral position, suspension being undesirable for the reason just mentioned.

Inguinal Hernia in the Female.

Berger relates (*Le Mercredi Médical*, 1892, No. 44) the following case of encysted hernia: The patient was a woman upon whom he was performing an operation for the radical cure of an imperfectly reducible left inguinal hernia. On cutting down he entered a serous sac closed on all sides, through the transparent wall of which a portion of omentum was plainly visible. The omentum was exposed by a further incision and resected, and the sac dissected. The latter was intimately connected with the round ligament, but could be isolated from it. The wall separating the hernia from the first cyst could not be separated into two layers. The author states that the hernia was surely congenital, and is to be explained in the same manner as the infantile hernias of the vaginal tunic in the male, at least as regards the congenital variety. Berger believes that in some instances these hernias are acquired. A case is related in which the author operated upon a boy, seventeen years of age, in whom an encysted hernia was unaccompanied by fluid. Some authorities have held that fluid is always found in the sac of these hernias.

Reclus operated on a woman with a tumor in the labia majora as large as

the head of an adult. There was absence of impulse on coughing, and the enlargement was thought to be a simple hydrocele, but it was found to contain omentum. Other cases are cited by Routier and Tuffier.

On Parasitic Protozoa in Cancerous Tumors.

Ruffer (*British Medical Journal*, 1892, vol. ii.) states that since the publication of the first note on the same subject, by Mr. J. Herbert Walker and himself, they have been able to further confirm the opinion expressed at that time. Additional evidence is furnished by the observations of Sawtschenko in Germany, of Foà in Italy, and of Soudakewitch in Russia, all of whom have found the parasites in carcinomatous tumors.

The present communication describes what has been observed for the first time, namely, the *intra-nuclear* stage of the parasite. The protozoa first appear in the nucleus of the cancer cell as hard, dark-staining, small, spherical bodies, almost indistinguishable from the nucleolus of the cell. They scarcely ever occur singly, but are found in groups of two, three, or more, sometimes as high as twenty. When filled with these spores, the nucleus appears as a hard, dark-brown mass with irregular outlines. As the organism develops it becomes more transparent, and later a dainty, small nucleus appears in the centre of each parasite, the surrounding capsule at the same time becoming distinct. Occasionally one parasite increases in size at the expense of its fellows. The parasites gradually approach the periphery of the nucleus and make their escape in the surrounding protoplasm, at the same time increasing in size. The most numerous instances of this intra-cellular stage of the parasite were found in an extremely soft and fast-growing cancer of the breast. Fragments hardened in osmic acid solution and in Fol's solution revealed the presence of the protozoa best.

The Surgical Treatment of Perityphlitis.

Von Bergmann, in a recent lecture (*St. Petersburger medicinische Wochenschrift*, 1892, No. 41), called attention to the confusion which exists in the classification of inflammations about the cæcal region. It is necessary to distinguish more carefully between typhlitis and perityphlitis than has heretofore been done. Cases called perityphlitis that recover after expectant treatment have been either cases of typhlitis, and should be so placed, or acute attacks of chronically inflamed vermiform appendices, which do not go on to perforation. Typical cases of typhlitis will rarely require surgical treatment unless there is obstinate constipation or ulcerations of the bowel. In describing affections of this region, that name should be used which will indicate the seat of the original trouble. When doubt exists in regard to the diagnosis, much information can frequently be gained by examining the patient under an anæsthetic.

In one hundred sections for perityphlitis, Weir found the vermiform process perforated in eighty-four instances and the seat of inflammation three times. Einhorn found the appendix diseased ninety-one times in one hundred sections for perityphlitis. Matterstock, in one hundred and forty-six operations in

adults, found the process diseased one hundred and thirty-two times, and in forty-nine children in thirty-seven cases.

The earliest sign of an abscess is a positive indication for operation. In intra-peritoneal abscess, the possibility of multiple foci must always be borne in mind. If there is an extra-peritoneal abscess, it probably communicates with an intra-peritoneal collection. The radical excision of the vermiform process is to be done in the intervals between attacks. Cases of general peritonitis are unfavorable for operation, and one is justified in declining this measure.

Senile Tuberculosis.

After a discussion of several cases of this form of tuberculosis and the different phases under which it makes its appearance, Marsh (*Lancet*, No. 3581) gives the following as the clinical points of value in the diagnosis of these conditions: The diagnosis is to be made from osteo-arthritis. In spinal involvement, an angular curvature points almost conclusively to tuberculosis, but is only available in the dorsal region and must not be regarded there as absolutely pathognomonic, while in the cervical region angles and curvatures are often present, due to entirely different causes. Pain is no trustworthy guide. Swelling varies in amount in some cases; in the knee, wrist, and elbow it is slight; but in other situations it is much more marked, and is due to the pulpy thickening of the synovial membrane. It seems to be a symptom upon which some stress may be laid. Stiffness is not a reliable sign. Two important symptoms of senile tuberculosis are dusky congestion of the skin and increase of the temperature of the part. The one event, however, which may be regarded as very nearly conclusive is the occurence of suppuration. In the case of glands, the diagnosis lies between malignant disease and senile tuberculosis, and suppuration would point to the latter, although it has been known to occur as a complication of malignant disease. In some cases the family history might be of assistance in the diagnosis, but it is usually no safe guide. The presence of phthisis in the lungs, however, would point strongly to tuberculosis. He says little of prognosis and treatment. Prognosis is usually unfavorable; the disease shows a strong tendency to advance and extend. The treatment should be as in younger subjects—rest, attention to general health, with evacuation of any purulent formations; and in some cases amputation of the limb even where phthisis exists to a marked extent. The operation in his cases has been followed by kindly, rapid healing; and if chloroform be used, he believes the danger to the patient is not as great from the operation as the condition without surgical intervention.

Ileo sigmoidostomy (Senn's Method).

Littlewood (*Lancet*, No. 3581) reports a successful operation in a case of intestinal obstruction due to malignant disease of the hepatic flexure of the colon, with recovery in twenty-three days after operation. He also suggests a modification of Senn's plates, with the idea of (1) doing away with the four stitches attached to the upper and lower margins of the apertures of the plates, which perforate the whole thickness of the intestinal walls; (2) of performing the operation more quickly; (3) of insuring a good opening between the two

pieces of intestine. The suggested modification is to fix a tube of decalcified bone into the aperture of one of the plates, so adjusted that it should fit accurately into the aperture of the other; by this method the two plates could be held together and the two parts of the intestinal walls between them brought evenly into contact with each other. The two plates are secured together by means of two fine silk ligatures attached to their central margins. The intestinal walls about their outer margins should, nevertheless, be attached by a few sutures.

Chancre of the Lip.

Paget, in an abstract from the literature on this subject (*Lancet*, No. 3581), concludes that chancre of the lip is commonest in the young and middle-aged; as common on the upper as on the lower lip; and as common in women as in men. In infants it often passes undetected, and the disease is considered to be hereditary. Chancre is rapid; its seat is often dark and rupial; the lip is often red, swollen, and stiff; it is seldom destructive, painful, or fetid. The glands in chancre swell in a few days; they rapidly attain a great size, yet are still loose, movable, distinct, true amygdaloid glands. Mercury will put an end to doubt. The microscope has been used with success; in two cases a suspicious sore was thus shown to be only the infiltrated granulation tissue of a chancre. But the surest guide of all in doubtful cases is the state of the glands. As regards prognosis, the disease will probably run its usual course, neither more nor less. Besides the usual treatment, the sore should be securely covered and the patient warned that he is a source of danger to all about him.

Albuminuria in Venereal Affections.

Géraud (*Archiv. de Médecine et de Pharmacie Militaires*, 1892, No. 10) states that in his experience one-third of the cases of old urethritis presented albuminuria. Balzer and Souplet found albuminuria present twelve times in one hundred similar cases. Albumin is not found in the urine in acute inflammation of the urethra before the discharge is established, and is absent if the secretion is suddenly checked. During the flow a small amount of albumin is present in the urine, but it is usually insignificant. If the quantity is marked, the kidneys are probably diseased. Of thirteen cases of double epididymitis reported by Géraud, nine had a notable quantity of albumin in the urine. This was undoubtedly due, according to the author, to ascending pyelo-nephritis.

In syphilis albuminuria is of more frequent occurrence. Géraud noted its presence 11 times in 23 cases of the primary disease; 8 times in 14 cases of secondary syphilis; and twice in 9 cases of the tertiary form of the disease. All of these patients were between the ages of twenty and thirty years. In four of the cases reported the albuminuria preceded the roseola, and in seven other cases it accompanied or followed the eruption. In two cases presenting suspicious ulcers, the diagnosis of syphilis was made before the appearance of the roseola, on account of finding albumin in the urine. The amount is always small, and disappears sometimes under milk diet and liberal draughts

of Vichy. The internal administration of iodide of potassium and mercury causes a diminution or disappearance of the albumin. Mercury alone was likewise efficacious. If the internal medication was stopped more than fifteen days the albumin reappeared.

Géraud believes that albuminuria in primary syphilis is analogous to that which occurs in the acute infectious diseases. Albuminuria occurring after the administration of mercury must be classed as a toxic affection, or due to kidney degeneration, while that which appears in the tertiary stage is due, no doubt, to alteration of the blood without kidney lesions.

The Solution of a Uric Acid Vesical Calculus by Ems Water.

Aronson records in the *Berliner klinische Wochenschrift*, 1892, No. 41, the case of a man aged seventy-two years, who had been under the treatment of different physicians during a period of twenty-one years for gravel and bronchial catarrh. Professor Schönborn detected a stone of small size, almost surely uric acid, in the bladder. Later, the patient consulted v. Langenbeck, who also found a stone about the size of a hazel-nut. As operation was refused, Langenbeck sent him to the Ems Springs. After using the water four or five weeks the stone could not be found. He was examined seven years later, and still no evidence of the stone was manifest.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,

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Suppuration in the Maxillary Sinus.

As the result of twenty-eight cases of surgical treatment of empyema of the antrum, Dr. O. Chiari, of Vienna, comes (*Prager med. Woch.*, 1892, No. 24) to the following conclusions:

1. In very rare instances empyema due to periostitis of the roots of the teeth may be cured by extraction of the diseased root alone.
2. Assiduous syringing of the nose may produce decided improvement.
3. Injections into the antrum, even when systematically and thoroughly made, often fail to cure, though they usually produce improvement. In one of the cases narrated, however, a marked increase of suppuration was noted.
4. A few injections produce a cure only in cases of recent suppuration, the result of dental periostitis.
5. Successful injection through the orifice of the sinus, so that pus escaped with the liquid injected, succeeded only in one case.
6. Systematic injections are practised readily and properly only from the

alveolar process. Injections through the lower nasal meatus are very troublesome, and are usually too severe for the patient.

7. Insufflations of iodoform powder give no satisfactory result.

8. During all these therapeutic measures the antrum must be shut off from the mouth.

9. The best results follow tamponings with iodoform gauze, which very quickly subdue the suppuration, need changing but once a week, are readily made, and effectually close the antrum from the mouth.

10. For purposes of tamponing, an opening 4 to 6 mm. wide is usually made from an alveolus. Openings through the canine fossa are indicated only when there has been an opening made by the disease, or when the patient refuses to sacrifice a tooth, or when an extensive scraping of the antrum is requisite. Tamponade by way of the canine fossa is the more troublesome and painful.

Morbid Growths in the Nasal Passages; Fibro-sarcoma.

Dr. Juan Cisneros, of Madrid, reports (*Arch. Internat. de Rhin., Lar.*, etc., 1892, No. 14) a case of primitive fibro-sarcoma in a man forty-six years of age. It was quite large, occupying an entire nasal fossa, and was attached solely to the cartilaginous portion of the septum. It was removed by electro-caustic section without much hemorrhage. New vegetations soon sprouted, which were removed with forceps, and cauterized electrically at their bases. Nevertheless, a recurrent growth soon acquired large dimensions. The parts were then exposed by external access. The neoplasm was thoroughly removed, its points of implantation scraped and then cauterized. Recurrence soon ensued again. Fresh evulsion and cauterization were again followed by like rapidity of recurrence. The whole cartilaginous septum was then extirpated, and there was no further recurrence.

Pemphigus of the Oral and Pharyngeal Mucous Membrane.

Dr. Mandelstamm, of Kiew, discusses (*Berlin. klin. Woch.*, 1892, No. 49) the symptoms and differential diagnosis in cases continuing for some time without bleb-formation or simultaneous cutaneous manifestations, and where this eruption presents as a forerunner of pemphigus of the skin. During the course of several weeks, or months, there is formed on the mucous membranes of the mouth, tongue, pharynx, and even the larynx, numerous patches of white or whitish-gray deposits, varying in size from a lentil to that of a ten-cent piece, or even larger, which look very much like the pseudo-membrane of diphtheria. Some of them disappear quickly without traces. Others remain for a long time, and often become confluent, and these usually become thinner in various places, and reveal punctiform and larger red, and often dry and sometimes bleeding, segments of mucous membrane beneath. The surrounding mucous membrane is normal, or, at most, slightly œdematous.

There is no elevation of temperature, and no constitutional disturbance other than that produced by dysphagia, which prevents the glutition of proper nourishment.

The disease resists all treatment, sometimes for months. Salivation and fetor are present, as in several other diseases of the same region.

An Accessory Tongue.

An accessory tongue 2.4 centimetres in length and 8 millimetres in breadth, forming a tumor on the base of the tongue of a lad twelve years of age, and situated immediately in front of the angle formed between the two rows of circumvallate papillæ, was observed by Dr. M. Hajek, at the poliklinik of Prof. Schnitzler, of Vienna (*Internat. klin. Rundschau*, 1892, No. 31). It was severed from the tongue with scissors. Arterial hemorrhage ensued, which ceased after half an hour's energetic compression, followed by cauterization. Histologic examination revealed typical tongue tissue in all its constituents. The case is believed to be unique.

Tuberculosis of the Tongue.

Dr. Hajek reports (*Ibid.*) an interesting case of tuberculous infiltration of the folliculous structures of the tongue, with multiple nodules in its anterior portion. Despite concurrent tuberculosis of larynx and lung, histological examinations of portions excised for the purpose failed to reveal tubercle bacilli. This result is said to be not unusual in lingual tuberculosis, as exemplified in a number of recorded instances referred to. Under careful curetting, followed by frictions with lactic acid, the parts cicatrized in a few weeks.

Sarcoma of the Soft Palate.

Dr. M. Hajek reports (*Internat. klin. Rundschau*, 1892, No. 31) an instance in a man fifty-four years of age, which so closely simulated a fluctuating peritonsillar abscess that it was excised to give egress to the pus. Blood issued, commingled with broken-down tissue. Half an hour later such profuse hemorrhage occurred that the wound was packed with iodoform gauze, over which the edges were sutured. Eight days after removal of the stitches, sponge-like masses began to be discharged into the mouth, and the parts bled readily. Four weeks later the upper jaw of the same side was pushed forward, with distortion of the eyeball upward. The patient died soon after. Histological examination of an extirpated portion revealed round-celled sarcoma of excessive vascularity, with large and numerous cells and very little connective tissue.

[This case is somewhat similar to an unreported case of sarcoma in a lad brought a few months ago to Jefferson College Hospital clinic, and which so closely simulated a peritonsillar abscess as to invite incision. There was some escape of blood, but not in excessive amount. In both instances the lesion was on the left side, and in both a recent history of febrile sore-throat led to the mistake in diagnosis, which was rectified only after failure to give exit to pus, as expected.]

Adenoid Growths in the Pharynx.

Dr. Frank E. Miller, of New York, extols (*Med. Record*, 1892, No. 1111) Gottstein's improved curette, which he figures in connection with some instructive diagrams and cuts illustrating its use.

Stricture of the Œsophagus.

Dr. Walter F. Chappell, of New York, reports (*Med. Record*, 1892, No. 1111) some cases illustrative of the value of permanent tubage by Symond's methods.

Diphtheria.

Spronck describes (*Centralbl. f. d. med. Wiss.*, 1892, No. 19, from *Centralbl. f. allg. Path.*, etc., 1892, iii., No. 1) an œdema in the connective tissue around the wound of tracheotomy, and due to invasion by diphtheria bacilli, as proven by microscopic investigation, culture, and inoculation.

A few excellent results from the constitutional effects of pilocarpine in apparently hopeless cases involving the larynx, are reported by Dr. Hans Degle, of Kindberg (*Wien. med. Presse*, 1892, No. 44). From three to four centigrammes are given in the twenty-four hours in combination with infusion of ipecacuanha and syrup of senega. The beneficial effects begin in from twelve to twenty-four hours, with increased salivation and perspiration, sometimes attended with emesis and expulsion of membrane, without special nausea or any signs of collapse. No unfavorable complications from the remedy occurred in the cases treated, some of which were in very young children.

Spasmodic Cough.

Dr. Furundarena-Labat describes (*Rev. de Lar.*, etc., 1892, No. 4) a case of spasmodic cough, which he terms chorea of the larynx, in a girl twenty years of age, due to pressure upon the nasal septum by bilateral hypertrophy of the turbinates, as demonstrated by cessation of the painful malady on electric cauterization of the hypertrophied structures. Perfectly well until attacked with *la grippe* six months previously, the patient recovered with aphonia and a dry, barking cough, continuing during her waking hours.

[The choreic movements were doubtlessly the succussions of the paroxysms of cough.]

Morbid Growths in the Larynx.

The late Dr. P. Michelson, of Königsberg, left a paper on the connection between pachydermia laryngis and tuberculosis, which is published in the *Berliner klin. Woch.*, 1892, No. 7. At a recent meeting of the Verein für wissenschaftliche Heilkunde, Dr. Michelson exhibited a larynx from a female subject presenting the typical characteristics described by Virchow. This is the first reported instance of the typical form of the disease noted in a female subject. He then reports and illustrates a few instances of the disease in association with tuberculosis, one of which presents the most typical representation that has been published.

Dr. Edmund Meyer reports (*Berlin. klin. Woch.*, 1892, No. 19) two cases of pachydermia verrucosa laryngis. In one, a large grayish-white growth springing from the right ventricle, nearly occluding the larynx, was at first

taken for carcinoma. Microscopic examination of an extirpated fragment revealing its benignancy, it was removed endolaryngeally in several fragments. Careful investigation showed it to be a pachydermia verrucosa. The clinical and laryngoscopic features of this case are peculiar. The second case is one of those ordinarily classed as pachydermia.

Carcinoma of the Larynx.

In an excellent paper (*Deutsche med. Woch.*, 1892, No. 19) on the diagnosis and treatment of laryngeal cancer, Dr. Gottstein expressed his belief that in the majority of instances carcinomatous infiltration of the tissues precedes the development of the tumor. According to his experience carcinomatous infiltration without tumor-formation occurs more frequently and remains under observation much longer than carcinomatous tumors without infiltration. In one of his cases the carcinomatous infiltration existed for at least three years before the tumor began to be formed. Gottstein places little pathognomonic value upon impaired mobility of the affected vocal band, and realizes that the extirpation of fragments of the growth for microscopic investigation is usually impracticable. He relies greatly upon diagnosis by exclusion, taking carcinoma for granted whenever tuberculosis, lupus, syphilis, etc., can be safely excluded in the presence of a diffuse infiltration.

As to treatment, endolaryngeal procedures are justifiable only in very circumscribed growths without surrounding infiltration, and unjustifiable if there is the slightest infiltration. If the infiltration be slight, the larynx may be split and the diseased tissues be exsected with a surrounding zone of healthy tissue. If the infiltration is extensive, partial or total extirpation of the larynx is requisite accordingly.

Extirpation of the Right Side of the Larynx.

Drs. Kulenkampff and Noltenius report (*Berlin. klin. Woch.*, 1892, No. 36) a case of carcinoma of the right vocal band, for which unilateral laryngectomy was performed by Kulenkampff. The progress of the disease is well shown and illustrated, as is the laryngoscopic image taken six months after the operation.

On Death from Heart Failure after Extirpation of the Larynx.

Dr. M. Grossmann has been conducting some experiments (*Wien. med. Woch.*, 1892, No. 44) to try and determine the cause of death from cardiac deficiency setting in after a few days of satisfactory progress in cases of extirpation of the larynx. He inclines to the belief that irritation of the central ends of the severed superior laryngeal nerves, possibly excited by the antiseptic dressings, may be regarded as the cause, or perhaps a neuritis may be developed in the central portion of the severed nerve.

A marked increase ensues in the arterial pressure, producing repletion and distention in the large arteries and in the left ventricle.

OBSTETRICS.

UNDER THE CHARGE OF

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The Anatomical Results of Symphysiotomy.

Recent observations as to the increase in pelvic diameters following symphysiotomy have been made by Biermer, of Breslau, who reports his results in the *Centralblatt für Gynäkologie*, 1892, No. 51. He severed the symphysis pubis in four pelves, one a patient not in the puerperal state, the remaining three women having perished soon after labor. The results as given in figures, and obtained by measuring these pelves after section had been done, are as follows:

When the symphysis separated 1 cm. after incision, the antero-posterior diameter of the pelvic inlet was increased $\frac{25}{100}$ cm., the transverse diameter was increased $\frac{75}{100}$ cm., and the obliques $\frac{50}{100}$ cm.

When the symphysis pubis separated 2 cm., the antero-posterior diameter was increased $\frac{25}{100}$ cm., the transverse 1 cm., the obliques $\frac{75}{100}$ cm.

When the symphysis separated 3 cm., the antero-posterior was increased $\frac{50}{00}$ cm., the transverse $1\frac{1}{2}$ cm., and the obliques $1\frac{1}{10}$ cm.

When the symphysis separated 4 cm., the antero-posterior was enlarged $\frac{65}{100}$ cm., the transverse 2 cm., the obliques $1\frac{75}{100}$ cm.

When the symphysis separated 5 cm., the antero-posterior diameter was enlarged $\frac{83}{100}$ cm, the transverse $2\frac{1}{2}$ cm., and the obliques $2\frac{1}{8}$ cm.

When the symphysis separated 6 cm., the antero-posterior was increased 1_{10} cm., the transverse 3 cm., the obliques $2\frac{9}{10}$ cm.

When the symphysis separated 7 cm., the antero-posterior was increased $1\frac{4}{10}$ cm., the transverse $3\frac{1}{10}$ cm., and the obliques $3\frac{1}{2}$ cm.

When the patient was put in the lithotomy position and the symphysis pubis was incised, the two halves of the pubis separated spontaneously 4 cm. Motion could be distinctly appreciated in the right ilio-sacral joint.

When the pubic arch separated 9 cm. a cracking sound was heard in the right ilio-sacral joint, but on gentle pressure the joint completely closed. There was a separation, appreciable by the finger, of $1\frac{1}{2}$ cm. When the two halves of the pubes were so stretched that the distance between them measured $10\frac{1}{2}$ cm., a similar sound was heard at the left ilio-sacral joint. A visible separation measuring $1\frac{1}{2}$ cm. was detected in that joint.

Thirteen Cases of Symphysiotomy.

During the year 1892 (*Annales de Gynécologie et d'Obstétrique*, January, 1893), Pinard performed symphysiotomy eight times, and those associated with him in the Baudelocque Clinic of Paris performed the operation five

times—a total of thirteen cases in this clinic during 1892. The results, as regards the mothers, left nothing to be desired. The pelvis in each instance united solidly, the patients recovering perfectly in all particulars. Three of the children perished; in one case a fracture of parietal bone occurring, the child being born by extraction, the breech presenting.

The second infant was congenitally feeble, and an autopsy revealed no adequate cause of death.

In the third case the child died of fracture of one of the frontal bones; the head had been firmly engaged before the symphysiotomy, and the forceps had been applied, it being impossible to fit the instrument accurately upon the fœtal head.

The Use of the Esmarch Bandage in Symphysiotomy.

Törngren, of Helsingfors, reports (*Centralblatt für Gynäkologie*, 1892, No. 49), two interesting cases of symphysiotomy performed for contracted pelvis, terminating in the death of one of the mothers and the recovery of both children. The mother perished of fatty degeneration of the heart, pulmonary emphysema, and chronic nephritis, the immediate cause of death being paralysis of the heart. In both these cases the wide portion of the Esmarch bandage was employed to bring together the severed pubic joint with great convenience. Some hemorrhage was observed after the operation, coming probably from cavernous tissue situated around the *ligamentum arcuatum*. In one case this ligament was not divided by the knife, but it was found to have been torn asunder when the child was delivered with forceps.

Two Cases of Non-penetrating Rupture of the Uterus.

Kupferberg (*Münchener med. Wochenschrift*, 1892, No. 50), describes the case of a multipara who had had transverse presentation in one labor terminated by version and extraction. Her pelvis was normal in dimensions, the contraction ring was not discernible, and the general condition of the patient was good. There was no evidence of threatened uterine rupture, and accordingly under anæsthesia version was performed. The extraction of the child was easy, although the child was found to be dead, having probably perished several hours previous. The uterus contracted well, and was drawn somewhat to the right side. Twelve hours after labor, assistance was summoned on account of the pain experienced by the patient, and failure in the discharge of the lochia. On examination, a sensitive area was found in the left hypogastrium, the lochial secretion being absent. On examining the uterus, it was found drawn over toward the right; on the left side, extending from the os uteri, was a tear in the neck of the uterus an inch and a half long, through which two fingers could be introduced into the pelvis and carried to the anterior superior spine. The hand placed opposite recognized the fingers through the abdominal wall. The mesentery and intestines could not be felt through the laceration. A vaginal douche of ½ per cent. salicylic acid was cautiously given, a broad bandage pinned firmly around the abdomen, and twenty drops of tincture of opium were given, and the patient was brought into the hospital. The patient's recovery was uneventful, and occu-

pied two weeks. When she was discharged, the uterus had undergone good involution, and was drawn somewhat toward the left side.

A second case was that of a rhachitic woman pregnant for the fourth time. The history of her previous labors was that of instrumental and difficult delivery. Pelvis was contracted in the antero-posterior and oblique diameters. In the effort to save a living child, the patient was anæsthetized and version performed, some difficulty being experienced in bringing down the foot which had been grasped. The child turned suddenly, and it was thought that the head could be felt on the right side of the uterus apparently just beneath the abdominal wall. The child was delivered without especial difficulty, and was asphyxiated, but resuscitated. When an internal examination was made, it was found that on the right side of the cervix a rent extended from the inner to the outer os uteri, extending through the muscular tissue opening the parametrium, and extending downward and on the right a distance of two cm. In this opening neither mesentery nor intestine was found, but only a few blood-coagula; as the uterus could be easily brought down to the floor of the pelvis, the rent in its muscular layer was closed by sutures. The puerperal period was interrupted by parametritis, from which the patient recovered without further complication.

The Use of Electricity in Obstetric Practice.

Ludlow, in the *New York Medical Record*, vol. xlii., No. 26, describes cases in which great advantage was found in using the faradic current to promote uterine contractions, facilitate labor, and check hemorrhage. The battery had a contact-breaker capable of nice adjustment. The current was applied with the positive pole to the sacro-lumbar region, and the negative upon the abdomen. Sponge electrodes are found convenient for this use. Electrodes must be so placed that the current does not pass through the head of the child. Many prefer the hand to any metal or sponge electrode. His cases embrace retention of the placenta, post-partum hemorrhage, and the use of the forceps when the mother's strength failed. His results were uniformly good, justifying the commendation of this method of treatment.

An Eleven Months' Monster with Congenital Tuberculosis.

A very interesting case, showing intra-uterine tuberculosis, is described by Sarwey in the *Archiv für Gynäkologie*, Band xliii., Heft 1. The mother of the child was a multipara who had borne healthy children. When several months pregnant she received a great mental shock from an accident in which she supposed her husband had perished. Shortly afterward fœtal movements ceased, and she entered a gynecological clinic, where she was under observation. She was declared pregnant and subsequently discharged. Her labor came on at about the eleventh month of pregnancy, resulting in the birth of a monstrosity deformed in many portions of its body. During the dissection of this specimen, when the organs of the throat were removed, tubercular foci were found in the bodies of the three upper cervical vertebræ in which tubercle bacilli were demonstrated. The viscera of the fœtus and its cord and placenta revealed no evidence of syphilis or tuberculosis.

There is no reason to doubt the prolonged period of gestation in this case, as critical examination of the fœtus disclosed the presence of those conditions which point to prolonged gestation. The influence of the mental shock upon the development of the fœtus seems to be a direct coincidence in, not directly, cause and effect. The fœtus showed failure of development in many portions of the skeleton and in the organs of the special senses. A careful examination of the parents of the fœtus disclosed the fact that the husband had suffered for a long time with chronic cough, accompanied by muco-purulent expectoration. The mother of the fœtus showed no evidence of tuberculosis, and gave no family history of such a complication.

Cholera and Pregnancy.

Galliard (*Gazette hebdom. de Médecine et de Chirurgie*, 1892, No. 40) reports several cases of pregnancy complicated by Asiatic cholera. Two of these cases recovered; one was pregnant six months, and had a mild attack which resembled cholera, and recovered under treatment by lactic acid. A second favorable case was pregnant eight months, had also a mild attack of cholera complicated by jaundice on the seventh day, was delivered on the eighth day, and recovered after a normal lying-in period. Her child also survived. In the second case, the husband of the patient died of cholera, and the diagnosis seems to have been reasonably sure. Jaundice is not a common complication in cholera. Among the fatal cases was one pregnant at seven months, the fœtus dying *in utero*, and the mother perishing without the expulsion of the fœtus. Another, pregnant at eight months, died without expelling the fœtus, which died on the sixth day. Several other fatal cases are reported, in none of which was the fœtus expelled. In a patient pregnant eight months, the fœtus had died before her admission to the hospital. It was expelled on the eleventh day, the death of the mother following soon after. These cases were treated symptomatically with lactic acid, laudanum, cocaine, menthol, and intra-venous transfusion. The results of treatment were in the main entirely negative. The post-mortem examination upon the bodies of women dying with cholera while pregnant showed a very diminished power of resistance in all the tissues. It is interesting to note that while many acute infections result in the expulsion of the fœtus, in cholera the child dies *in utero*, but is retained. The mortality of pregnancy complicated by cholera is almost 100 per cent.

The Treatment of Post-partum Hemorrhage.

At a recent meeting of the British Medical Association, Herman, of London (*British Medical Journal*, 1892, No. 1669), describes the most important steps in treating post-partum hemorrhage as follows:

To make the uterus contract, to compress the bleeding veins, to clot the blood: To secure the first, kneading the uterus and introducing the hand within its cavity are of prime importance. Accompanying these, the injection of hot water is of great value, and is preferable to the use of ice or cold water. Reflex stimulation, by laying a cold, wet cloth over the abdomen, or putting the child to the breast, is also useful. So far as drugs are con-

cerned, ergot alone receives commendation; injection of perchloride of iron is recognized as efficient in some cases, but often attended with danger. The tampon of iodoform gauze is thought to be of use occasionally. Especial importance is laid upon compressing the uterus: one hand, being folded, is inserted, carrying the cervix as far backward as possible, while the other hand is compressing the uterus strongly downward against the first hand introduced; in addition, injections of hot water and turpentine have given good results in some cases.

GYNECOLOGY.

UNDER THE CHARGE OF

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DÜHRSSEN'S OPERATION FOR RETROFLEXION.

DÜHRSSEN (*Centralblatt für Gynäkologie*, 1892, No. 47) reports 130 operations (on 113 patients) for retroflexion of the uterus, with a permanent cure in 89.4 per cent. of the cases. In two-thirds of this number the organ was adherent, and the condition was complicated with prolapsed and adherent ovaries. Three of the patients were pregnant at the time of the report, and one had been delivered prematurely.

The following is the writer's mode of procedure: Adhesions are previously separated by Schultze's method. The vagina is thoroughly disinfected with a one per cent. solution of lysol, the operation being conducted under constant irrigation with a weaker solution of the same. A Sims's speculum is introduced, the anterior lip of the cervix is drawn down with bullet-forceps, and the uterine cavity is thoroughly curetted and irrigated with lysol. A sound is introduced into the bladder, and the viscus is pressed upward and forward by an assistant on the right. At the same time, the cervix is drawn downward, the usual incision is made in the anterior fornix, and the bladder is separated with the finger, up to the insertion of the peritoneum, as in vaginal hysterectomy. Another sound is then introduced into the uterus and the organ is strongly anteverted by an assistant on the left, until it comes in contact with the left index finger of the operator, which has been kept in the wound. The surgeon now transfixes the fundus with a curved needle, carrying a silk ligature, passed transversely; this ligature being only temporary is not tied, but the ends are held by the assistant on the right. From two to four provisional ligatures are thus inserted, each at a little higher level than the preceding one. Traction upon these serves to depress the fundus uteri still more, so that the surgeon can now insert three permanent silk sutures in a direction parallel with the axis of the vagina; these include the edges of the vaginal wound—but *not* the mucous membrane—and the muscular tissue at

the fundus, and are tied, cut short, and buried. The temporary ligatures are then withdrawn, and the vaginal wound is closed with a continuous catgut suture. The sound is removed from the uterus, the uterine cavity is again irrigated, and the vagina is tamponed with iodoform gauze.

The operation requires about ten minutes for its performance, and has never been followed by either severe pain or any bad results in the hands of the writer. The patient is kept in bed for eight days, but is not allowed to resume her ordinary occupation for some weeks. Occasional vesical irritation and menorrhagia of a transient character were the only disturbances which were noted in a few instances; in one case the sutures were discharged through the bladder. The mortality was *nil*, and in one case only was there slight septic trouble, due to the fact that bystanders were permitted to examine the patient immediately after the operation.

The writer regards his method as a decided improvement upon Schücking's, in which there is great danger of injuring the bladder and even the ureter, as shown by Glaeser; moreover, the suture within the uterine cavity may cause endometritis. Schücking's operation is followed by considerable pain, and the patient cannot dispense with a pessary, which is not required with Dührssen's method.

Pericystitis.

Hallé (*Ann. des Mal. des Organes Génito-urinaires*, November, 1892) describes two forms of perivesical inflammation, which occur in both sexes—the cicatricial or sclero-adipose (*sclêro-adipeuse*) and suppurative. Several clinical cases are described illustrating both varieties. In the former there is an accumulation of fibro-adipose tissue around the base and at the sides of the bladder, which is firmly adherent to the adjacent pelvic organs. Masses of such hard inflammatory tissue as large as a hen's egg may be felt around the terminal portions of the ureters; these are of considerable diagnostic value. In the female, where these are essentially the products of cellulitis, they may cause occlusion of the ureter with its serious consequences.

Perivesical abscess usually occurs as a small purulent focus in the midst of a mass of the fibro-adipose tissue before described. The writer believes that this condition is more common than is usually supposed, and reports several cases in which there was no communication between the bladder and the abscess cavity. The differential diagnosis between perivesical abscess and abscess in the bladder wall is very difficult except on post-mortem examination.

The Innervation of the Bladder.

Von Zeissl (*Ibid.*), as the result of a series of experiments on curarized dogs, arrives at the following conclusions: 1. The erector nerve is the motor nerve of the muscular layer and effects the relaxation of the sphincter vesicæ. 2. This relaxation is independent of the muscular layer. 3. The hypogastric nerves preside over the closure of the vesical orifice, though their action is feeble. 4. Irritation of these same nerves causes arrest of the spontaneous movement of the bladder. 5. The action of both nerves is governed by the law that the motor nerve trunks of a muscle also supply the

antagonized fibres in the same system of muscles. 6. The erector nerve contains motor fibres supplying the longitudinal muscular fibres of the bladder and also the circular ones of the sphincter (*fibres d'arrêt*), while the hypogastric nerves supply motor fibres to the sphincter and inhibitory fibres to the muscular layer of the bladder.

Stricture of the Urethra in the Female, following Gonorrhœa.

Genouville (*Ibid.*) calls attention to the rare occurrence of this condition in the female and makes this subject the basis of an elaborate paper, of which the following are the main points: A careful review of the literature shows that about sixty cases have been reported, the first mention of the lesion having been made by Lisfranc in 1824. It is probable that many cases escape notice, the symptoms being referred to functional trouble. The writer agrees with Van de Warker, however, that a moderately tight stricture of the urethra in the female causes much more reflex disturbance than in the male, because the bladder in the former has less power to overcome resistance than in the latter. The average age of patients with stricture was about forty. The most common cause is urethritis, as originally pointed out by Ricord. Traumatism is a rare etiological factor, one case having followed fracture of the pubic bones. Under this category might, however, be included strictures due to cicatricial contraction following puerperal and syphilitic lesions. Senile contraction of the urethra and congenital malformation (two cases of the latter are recorded) have been mentioned. Stricture following gonorrhœa is of slow development as compared with the same condition in the male—from one to twenty years, the mean being eight—probably due to the greater power of the female bladder of overcoming resistance *a fronte*, as before stated.

Our anatomical knowledge is based on the results of four autopsies, in which the condition found was simple cicatricial contraction of the canal, as in the male, situated near the meatus.

The first symptom noted by the patient is difficulty in micturition, with or without pain. The stream of urine is smaller than normal and is ejected slowly, eventually drop by drop. The contraction becomes more and more marked until retention is complete. Two cases of rupture of the bladder from excessive distention have been reported, in spite of the enormous increase in volume of which the viscus is capable. In other cases the principal symptom is a frequent desire to urinate, with agonizing pains during and after the act. Vesical tenesmus and the passage of blood are present when cystitis exists as a complication. Of course, in patients who have had gonorrhœa there may be accompanying disease of the uterus and adnexa. With stricture of long standing, cystitis and pyelo-nephritis may develop, as in the male.

The first object of the gynecologist on learning of the difficulty in micturition, should be to see if the obstruction is not caused by the pressure of some intra-pelvic neoplasm or foreign body within the vagina. Calculus or cystitis will next be eliminated, since these are so common; in fact, the existence of the stricture may not be suspected until an attempt is made to sound the

bladder. Van de Warker prefers to use an olive-pointed bougie. The stricture will usually be found in the anterior third of the urethra, though in cases of multiple stricture a contraction has been found near the neck of the bladder. One finger should always follow the course of the sound through the urethro-vaginal septum, since a well-marked induration will be felt at the point where the tip of the instrument is arrested. In some instances the entire urethra is transformed into a column of cicatricial tissue. Vesico-vaginal fistula may be a complication in cases where stricture follows puerperal lesions. Stricture of the female urethra always tends to become still more contracted, so that expectant treatment is out of the question. Gradual dilatation with bougies should first be tried every day or two. Rapid and forced dilatation have given good results, though serious, even fatal, accidents have occurred. Electrolysis has been little employed except by a few surgeons. Internal urethrotomy may be either partial (the cutting being confined to the mucous and submucous layers) or complete, when the entire thickness of the urethral wall at the point of stricture is divided. The latter is simply the "button-hole" operation long ago proposed by Dr. Emmet, and is preferred by the writer to all other methods of surgical treatment, if gradual dilatation fails.

Peritonitis: Its Nature and Prevention.

Tait (*British Medical Journal*, November 12, 1892) reiterates his well-known views with regard to the pathology of peritonitis, denouncing those who differ from him in his usual vigorous and picturesque language. He scouts at the germ-theory of its origin, and reasserts that "septic peritonitis, save where definable from evidence wholly extrinsic to the condition of the peritoneum, is an etiological entity which exists only in the mind of the pathological metaphysician." He believes that too little importance has been assigned to nervous influence in furnishing the initial stimulus, basing his opinion upon the severe nervous shock noted at the outset in fatal cases of peritonitis. He places much less reliance upon the pulse and temperature than formerly, but regards an anxious facies, the presence of great nervous excitement, and abdominal distention as grave symptoms. "If a patient will be quiet and not talk, she is pretty sure to recover. If she persistently chatters, she is pretty sure to die."

The liver is to be regarded as the "lethal organ" in peritonitis, hypersecretion of bile and bilious vomiting, due to temporary paralysis of the pylorus, being early noted. If the case is to terminate fatally the vomited fluid assumes a coffee-ground appearance, "due to hemorrhagic flow from the liver." Marked changes in the latter organ will invariably be found after death, especially congestion and disintegration of tissue. As regards prognosis, the writer believes that if the serious symptoms develop by the fourth day after operation a fatal result is to be expected; if not until the sixth day, or later, the patient's chances of recovery "increase in a geometrical ratio."

The *prevention* of peritonitis is the one thing to be aimed at, since the treatment of the condition after it has fully developed is most unsatisfactory. Reject opium, starve the patient as nearly as possible during the first forty-

eight hours, banishing *ice* entirely. Thirst is not an indication to give fluids, but is merely the result of traumatism to the peritoneum. If no gas has been passed *per anum* during the first twenty-four hours after operation, and there is even moderate tympanites, the nurse is directed to give a soap and turpentine enema. If this is ineffectual, a Seidlitz powder is administered, and is repeated every hour until it acts. If vomiting occurs, with distention, five grains of calomel are given instead of the saline laxative. Even after peritonitis has apparently fully developed, the patient should have the benefit of the purgative treatment.

[Mr. Tait is so far *facile princeps* in all that relates to the practical side of abdominal surgery, that his dogmatic statements in pathology are apt to be as widely accepted as his admirable clinical teachings. The natural effect of the entire rejection of the germ-theory upon a certain order of minds would be to fill them with fatalistic views regarding peritonitis, which would be a direct injury to the adoption of an exact surgical technique. Even from a purely utilitarian standpoint, we cannot all afford to dispense with at least an "antiseptic conscience."—H. C. C.]

Cœliotomy *versus* Laparotomy.

It is gratifying to note that Dr. Harris's missionary work is beginning to bear fruit abroad, as well as in his own country. Saenger, who is recognized as a true cosmopolitan in medicine, makes a strong plea (*Centralblatt für Gynäkologie*, 1892, No. 45), for the adoption of the term "cœliotomy" by his *confrères*, on the ground that since a German writer was originally responsible for the introduction of the incorrect word, Germans should be prompt to correct the error. In this respect the gynecologists should imitate the anatomists, who have begun to make vigorous efforts to purify their nomenclature.

Cunei-hysterectomy.

Thiriar (*Centralblatt für Gynäkologie*, 1892, No. 42), under this term describes an operation for straightening the anteflexed uterus, which seems to be more daring and ingenious than practical. He opens the abdomen, excises a wedge from the posterior uterine wall, and unites the raw surfaces with catgut sutures. In one instance the wedge extended as deep as the endometrium; the patient recovered without bad symptoms and was entirely relieved of her dysmenorrhœa.

Cancerous Degeneration of Uterine Fibro-myoma.

Schäfer (*Virchow's Archiv*, 1892, Bd. cxxix., Heft 1) reports an interesting case of primary carcinoma of the lungs with metastasis in a uterine fibroid, and calls attention to the rarity of such a degeneration. Seven other cases are cited.

Superficial Epithelioma of the Corporeal Endometrium.

Gebhard (*Zeitschrift für Geb. und Gyn.*, Band xxiv., Heft 1) describes the microscopical appearances in a uterus removed *per vaginam* from a woman

aged sixty-six years. At the fundus uteri he found a commencing epithelioma, circumscribed and confined to the superficial layer. Piering reported the case of a similar diffuse cancroid with metastases in the portio—a rare complication, as metaplasia of cylindrical to flat epithelium is seldom observed. Zeller has described a superficial growth which under the microscope appeared to be benignant (*ichthyosis uterina*). There was an absence of the epithelial offshoots observed in cancer.

Palliative Treatment of Cancer of the Portio.

Marocco (abstract of pamphlet in *Centralblatt für Gynäkologie*, 1892, No. 40) has had excellent results with palliative treatment, and believes that patients often live longer than after radical operations. He curettes with the sharp spoon and then applies tannin, first every day, and then at longer intervals. The ulcerated surfaces clear off and there is a marked improvement in the general health. This course of treatment requires no little patience on the part of the physician, but is justified by the results.

The results in thirty cases are shown, some of the patients having been under treatment for three years.

Asepsis in Cœliotomy.

Mironow (*Centralblatt für Gynäkologie*, 1892, No. 42) made a series of observations at the operating-table, in twenty-eight cases of abdominal section in Fritsch's clinic. Strict aseptic precautions were observed, no chemical antiseptic being introduced into the peritoneal cavity except in those cases in which it was necessary to use the iodoform-gauze tampon. Small pieces of plain gauze were sterilized for an hour with the instruments and were not uncovered until immediately before the operation. One of these was introduced into the peritoneal cavity as soon as it was opened, and another at the close of the operation just before the sutures were inserted, the pelvic and abdominal cavities, intestines, and tumor being wiped with them. A piece of the gauze was at once cut off with sterilized scissors and placed in 10 per cent. gelatin and 1½ per cent. agar-agar. In several instances the surrounding air was examined. Sponges, adhesions, the contents of diseased tubes, etc., were subjected to a careful bacteriological examination.

In twenty-one out of the twenty-eight cases no micrococci were found on the gauze which was placed in the abdominal cavity as soon as it was opened, while in only eight instances were they absent from the gauze used at the close of the operation. These microörganisms must have been introduced from without, and, although they caused no decided septic symptoms, in eleven cases there were marked elevations of temperature during the first week of convalescence. Since the air and the hair and beard of the operator were not sterilized, it seemed fair to infer that they were the source of infection—in fact, *micrococci cerei albi* were quite uniformly found both in the surrounding air and in the cavity at the close of the operation. The shorter the operation, the less the chance of infection, as shown by the temperature charts. Unfortunately it is not practicable to perfectly sterilize the air of the operating-room, even when it is filtered through absorbent cotton, but it should be kept as pure as possible.

The experiments seemed to prove that the peritoneal cavity does not contain microörganisms, since these were almost uniformly absent from the gauze introduced at the beginning of the operation, even when there was adhesive peritonitis subsequently, which seemed to support Bumm's view that such peritonitis following an aseptic cœliotomy is due not to infection, but to mechanical or chemical irritation.

Examinations of the contents of cysts and adherent tubes, even when these were purulent, showed in the majority of cases an absence of virulent organisms, which explains why such fluids often escape into the peritoneal cavity without usually causing serious consequences, and that irrigation with antiseptics is superfluous under the circumstances. Practically strict asepsis, though it may not render the cavity perfectly aseptic in a bacteriological sense, is still amply sufficient.

PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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A Case of Acromegaly in an Infant of Fourteen Months.

Moncorvo, of Rio de Janeiro (*Revue mensuelle des Maladies de l'Enfance*, December, 1892), reports a well-marked case of acromegaly, observed in conjunction with microcephalus, in a female infant fourteen months old. The case is interesting in several respects, especially as to the age of the subject. The child was born at term, began teething at four months, and had none of the eruptive fevers. The mother was a delicate woman of very nervous temperament, who from the second month of her pregnancy had been subjected to violent emotion, caused by a rupture with her husband and her subsequent abandonment. The child at fourteen months of age exhibited well-marked signs of congenital microcephalus, with the consequences of bilateral cerebral atrophy—idiocy, aphasia, paraplegia, contractures, etc.; but also, besides these, the fundamental symptoms of the acromegaly of Pierre Marie—the retreating forehead, the vertical elongation of the oval of the face, the great enlargement of the nose, the prominence of the superior maxilla, the thickening and advancement of the lower lip. In addition to these facial signs there was cervico-dorsal kyphosis with lumbar lordosis and projection of the anterior plane of the chest, compensated by flattening of the abdominal wall; and finally, the spade-like hands, with prominent thickened palmar surface, short fingers of uniform width and sausage-like appearance.

From a study of all cases reported up to 1890, Souza Leite states that, in the cases where the beginning could be definitely fixed, the manifestations of acromegaly appeared between nineteen and twenty-six years; in only one case, that of Freund, did the trouble commence as early as puberty. Marie stated that the disease was neither congenital nor hereditary. While it is impossible to assert that, in the case under discussion, the disease was congenital, it is certainly evident that its onset must have occurred very close to the time of birth. Among the antecedents was to be noted a nervous temperament in the maternal grandmother and in the mother, with great mental anxiety during the pregnancy, and on the father's part whimsicality and levity of character; but no history of acromegaly in any member of the family. The coexistence of microcephalus, with its well-marked consequences, adds another element of interest to the case, which in this respect, as well as in the age of the subject, is unique.

A Case of Chylous Ascites in an Infant.

Nieuwondt and Rozenzweig (*British Medical Journal*, 1892, ii. p. 123) report a case of this character in a child of fifteen months. The abdomen was tapped twelve times within three months, examination after each puncture showing integrity of both abdominal and thoracic viscera. The case was finally cured.

The liquid withdrawn by the aspirator was thick and looked like milk. Its specific gravity was 1022, reaction neutral, and odor nauseous. There was no spontaneous coagulation, but a coagulum formed after heating. By the addition of nitric acid a white deposit was formed, becoming yellow when the liquid was heated. Caustic potash increased the fluidity of the liquid. Under the microscope, in the midst of a finely granular serum, large nucleated cells were observed, the general picture being that of chyle.

Such cases are quite rare. Burey, who has collected thirty-three cases from the literature, attributes chylous ascites either to compression of the thoracic duct, filariosis, tuberculosis, or the puerperal state. In the present case none of these causes could be considered.

A Remarkable Instance of Curative Effect of Exploratory Laparotomy.

In a paper presented to the Société Anatomique de Paris, Pierre Delbet (*Bulletins de la Société Anatomique de Paris*, 1892, October and November, p. 681) records a remarkable instance of the curative effect of an exploratory laparotomy upon a case of syphilis of the liver. The patient was a boy of two years and four months who had always been delicate. Toward the age of a year and a half he had presented a generalized eruption, which had yielded rapidly under alkaline baths prescribed by the family physician. Shortly after this the child had commenced to fail and lost appetite. It was soon noticed that the abdomen was becoming enlarged, and a blister was applied to the right hypochondrium. The health, however, continued to fail until at the age of two years and four months he was seen for the first time by the author. He was then greatly emaciated; the skin presenting a

pale yellowish tint, but not jaundiced. The abdomen was greatly enlarged, the right side, from costal border to the iliac fossa, being filled with a tumor continuous with the liver. Its surface was smooth and firm to the touch. Syphilis was immediately suggested, but, in spite of the eruption previously noted, this was positively rejected by the family attendant. The only possible alternative was to attribute the growth to malignant disease—sarcoma—with very grave prognosis. In view of this, an exploratory operation was made, and showed that the tumor consisted of the enlarged right lobe of the liver, which was pale in tint with violaceous marblings. A mass of enlarged glands could be felt in the gastro-hepatic omentum, while along the external border of the rectus abdominis, just outside of the peritoneum, was a chain of nodes, like indurated glands. One of these was removed for study, the impression at the time being that the case was one of diffused sarcoma, and, therefore, unsuitable for further interference. Before closing the wound several punctures were made in the liver, at the request of the physician, but they revealed nothing. The operation was thus purely exploratory.

The result was surprising. After three days the child regained appetite and cheerfulness, which had been lost for several months. Even before the sutures were removed, he was kept in bed with difficulty, and as soon as permitted began to play with other children. He ate, throve, and complained no more. The liver rapidly decreased in size; and therefore, no longer doubting the syphilitic nature of the disease, the author advised specific treatment, but was still opposed by the physician, who again refused to accept such a diagnosis. Two months and twenty days after the operation the liver had regained its normal dimensions. A few days later, however, three gummata appeared almost simultaneously, one upon the forehead and two in the scalp, and positively proved the nature of the affection, after which anti-syphilitic medication was begun, but at a time when the liver had already returned to its normal size.

Delbet reports this very singular observation, but does not presume to offer an explanation, although he does not accept as satisfactory any of the theories heretofore advanced.

The Anæmia Caused by the Anchylostomum Duodenale.

Ervant Arslan (*Revue mensuelle des Mal. de l'Enfance*, December, 1892, p. 555) makes an interesting report of the study of twenty-one cases of this parasite occurring in children under fifteen years of age. The cases all occurred within a limited territory in the provinces of Padua and Venice; they were confined to the poorer classes, and usually appeared in families in which other members were affected. The onset is always characterized by digestive disturbance, especially of the intestine, diarrhœa or constipation, colic, anorexia or abnormal appetite, vomiting after food, sometimes convulsions. This first period usually passes unnoticed, the disturbance being attributed to indigestion or gastro-intestinal catarrh. To these first manifestations are soon joined the symptoms of anæmia, which become rapidly aggravated. After a time, more or less long, the whole series of symptoms becomes rapidly worse, and with loss of flesh fever becomes more marked, and the little patient presents the appearance of advanced phthisis. Happily, in children the course is quite slow before arriving at so extreme a point.

An examination of the blood shows a combination of the characteristics of chlorosis and pernicious anæmia—marked diminution of hæmoglobin (in some cases the proportion falling as low as 13 per cent.); the reduction in the number of red corpuscles, which are pale, easily alterable, and not forming rouleaux; micro-poikylocytosis; sometimes megaloplasts of Hayem and granular protoplasmic masses; slight increase in the number of leukocytes of various sizes, of which the largest contain small black granules.

The urine is pale, of low specific gravity, often neutral in reaction, and generally increased in quantity. Sometimes albumin is present. In the last stage appears a peptonuria.

The examination of the stools is most important. These are sometimes diarrhœic, and often streaked with blood; in other cases they are normal. The eggs of the anchylostomum are quite characteristic, and appear with varied segmentations (mono-, bi-, polycellular). If the stools have stood for more than a day the larvæ may be seen in process of development. The ova of the ascaris lumbricoides often accompany those of anchylostomum; and crystals of Charcot-Leyden with some red globules may be at times observed. If the cause be recognized in time the prognosis is not bad. Treatment is simple. The ethereal extract of male fern is efficacious, and has been used by the author for children in a dose not exceeding one drachm in aromatic emulsion, to be taken at night in two parts, and followed next morning by a purgative. This dosage may have to be repeated several times at intervals of two or three days. After expulsion of the worms, tonics of iron, quinine, and the like are indicated.

Especial interest attaches to the author's researches into the pathogeny of this anæmia. Up to 1889 all writers attributed it to the direct withdrawal of blood made by the worms fixed to the intestinal mucous membrane. At that time Lussana advanced the view that the anæmia was a result of the absorption of a toxine generated in the intestine by the presence of the anchylostomum. This theory has received confirmation from Arslan's researches, which demonstrate one of the most striking types of auto-intoxication. After extracting the toxine from the urine of two patients by the method of Brieger-Otto, inoculations of rabbits were made, with progressively increasing doses. These animals quickly presented all the characteristic blood-symptoms of the anæmia under consideration. After discontinuing these injections, the animals gradually regained their former condition, with coincident retrogression of the blood-lesions. As control experiments, the same process was carried out with the urine of these patients after expulsion of the worms, or of persons affected with other forms of anæmia, without obtaining the slightest change in the blood of the rabbits inoculated.

The author, in conclusion, suggests that this experiment, which he has applied to the anæmia caused by the anchylostomum, may lead to the explication of the nervous and general symptoms which so frequently attend the presence of other intestinal parasites in children.

The Treatment of Cholera in Children.

Baginsky (*Internationale klinische Rundschau*, 1892, No. 45, p. 1830) gives a timely sketch of his treatment of this disease in children. After referring

to prophylaxis, which needs no special mention, he recommends, as all other writers do, the most careful treatment of the slightest manifestation of diarrhœa occurring during the prevalence of cholera. In these cases he deprecates the use of opium. If the tongue is coated, a few drops of hydrochloric acid in decoction of althea may be given; or small doses of calomel, if decided fever, nausea, and coated tongue accompany the diarrhœa and show the participation of the stomach. Other antiseptics, such as naphthalin, iodoform, carbolic acid, benzoate of soda, etc., have not proved of much value, except, perhaps, resorcin as an anti-fermentative in acute intestinal catarrh. This drug may be given in doses of from one-fifth to three-quarters of a grain. Salep and starch enemata are to be avoided, because they simply serve to increase fermentative changes in the bowel. Sherry, port wine, or cognac may be required as a stimulant. The abdomen should be protected with a warm binder, or, if decided fever be present, a wet pack to the belly may be of advantage. If diarrhœa persists after the fever subsides, nitrate of silver or tannic acid may be used, preferably as a clyster. Salol, in doses of one-fifth to two-fifths of a grain to sucklings, and from two-fifths to four-fifths of a grain to children two or three years old, several times a day, may be given. This dose may be increased to 1 or 2 grammes daily for still older children.

If, despite this cautious treatment, vomiting is added to the diarrhœa, with sharpened features and other evidences of a true choleraic attack, a warm mustard bath should be given, followed by brisk rubbing of the skin, and the administration of cognac in black coffee, with continuation of the previous treatment. Ice-cooled Seltzer water with cognac may be given to allay the thirst.

In the algid stage the indication is to maintain the circulation. Cantani, Kronecker, and Meinert employ for this purpose subcutaneous injections of a 1 per cent. solution of sodium chloride (made, according to Cantani, of four grammes sodium chloride and three grammes carbonate of sodium to the litre of water). Hypodermatic injections, also, of tincture of musk, ether, or spirits of camphor, especially the first two, are valuable in this stage, as are strychnine ($\frac{1}{100}$ gr.) and quinine ($1\frac{1}{2}$ gr.). Generally speaking, the chance of life lies not so much in the hands of the physician as in the attentive devotion of the nurse in keeping up frictions and baths and administering frequent small portions of ice-water, cognac, and coffee.

With the beginning of reaction this assiduity must be redoubled. Failure of the pulse must be met by subcutaneous infusion and injections of tincture of musk and ether. The patient should be covered more warmly, and a gentle perspiration be encouraged, but a warm pack to produce sweating is injurious. The urinary excretion should be watched, and, if retention be noted, the catheter should be employed. In other respects the usual treatment of typhoid fever should be followed. High temperature, delirium, uræmic convulsions, parotitis, pneumonia, and nephritis are to be treated in the usual way. In convalescence extreme care in diet should be enforced, and return to the ordinary mixed diet should be most gradual.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Experiments Relative to the Etiology of Cholera Asiatica.

In the *Münchener medicinische Wochenschrift* of November 15, 1892, Prof. Pettenkofer relates at length his experiments during the recent epidemic of cholera relative to the etiology of that disease. Pettenkofer is one of the few remaining adherents of the old theory of the meteorologic factor in the causation of infectious diseases, more particularly of those occurring in epidemics. The necessary factors in the etiology of these diseases he expresses by the formula, $x+y+z =$ infectious disease, in which x represents the specific microörganism of the disease, y the climatic and local predisposing factors, and z the individual predisposition. Without the simultaneous occurrence of all of these he believes an epidemic impossible.

In the recent epidemic of cholera Munich escaped, and, as commerce and travel between that city and those in which the epidemic raged was unrestricted, Pettenkofer refuses to believe the escape of Munich to have been due to the non-transport of the comma bacilli to that city, and attributes it to the absence of certain atmospheric conditions necessary to the development of the disease. With a view to proving this he resolved to test upon himself the power of a virulent culture of the cholera germs to produce the disease. Animal experiments, he reasons, are misleading; the only reliable conclusions are deducible from inoculations in man.

Having obtained a fresh culture of the cholera bacilli from Gaffky in Hamburg, Pettenkofer prepared bouillon cultures from these. These bouillon cultures were shown by examination to contain very large numbers of the germs. On the morning of the 7th of October, Pettenkofer swallowed 1 c.c. of such a bouillon culture suspended in 100 c.c. of a 1 per cent. solution of sodium carbonate, the object of which was to neutralize the acid of the gastric juice. No effect was noticed for about thirty hours, when diarrhœa commenced, which lasted eight days, until the 16th of the month. The passages were at first of soft consistence only, and colored: but by the second day of the diarrhœa they had become very watery and almost colorless. This continued until the morning of the 13th, when they again became colored and of thicker consistence. On the morning of the 16th the passage was normal. During all this time there are said to have been no other symptoms, except occasional painful desire to stool and a great deal of rumbling in the bowels. The appetite remained good, there was no nausea at any time, and the diet was unrestricted. Sleep was only a few times interrupted by desire to stool, and Pettenkofer continued the daily routine of his work as usual. He says that but for the diarrhœa he should not have known that he was sick in any way. No treatment was used.

Examinations for the cholera bacilli were made by Drs. Pfeiffer and Eisenlohr. They were found in the watery stools in large numbers, but gradually disappeared as the passages became thicker, until on the 16th none could be detected.

Pettenkofer considers this sickness to have been nothing more than a moderately severe diarrhœa, perhaps dependent upon a slight degree of enteritis.

The experiment was repeated on the 17th of October by PROF. EMMERICH with similar result, though the symptoms in this case were more severe. Many of the stools were of a distinctly rice-water appearance, and they were much more frequent than in Pettenkofer's case. Prostration, also, was apparent, though the mind appears to have been cheerful. On October 24th the stools became formed, and were normal from that time. Comma bacilli were found in the stools from the 18th to the 28th; on the 19th in pure culture in the rice-water discharges.

Both of these cases were observed clinically by Profs. Bauer and Von Ziemssen, and were said by them to differ materially from cases of Asiatic cholera. As sufficient individual predisposition is supposed to have been present in both cases, Pettenkofer attributes his own and Emmerich's escape from cholera to the absence of the peculiar atmospheric and local conditions which he believes to be always necessary to the development of the infectious diseases.

The remainder of the paper is devoted to an extended argument in support of this theory. The relation of temperature, atmospheric conditions, rainfall, and the condition of the soil to previous epidemics of cholera are cited, and these are put forward by Pettenkofer as the peculiar climatic and local conditions necessary to cholera.

The paper concludes with suggestions as to the proper measures of prevention. Too much attention is paid to preventing the transport of the cholera bacilli—an impossibility, he says—and too little thought is given to measures tending to counteract the peculiar climatic influences.

It was hardly to be expected that conclusions so radically variant from the generally accepted notion of the causation of infectious diseases should go long unchallenged. In No. 47 of the *Deutsche medicinische Wochenschrift*, S. GUTTMANN reviews the results of the experiments and finds in them a confirmation of the generally accepted theory rather than of that advanced by Pettenkofer. He believes Emmerich to have suffered from a mild attack of cholera, and Pettenkofer to have had a choleraic diarrhœa. He cites cases in which cholera has unquestionably followed the contamination of drinking water with cholera dejections. He calls attention to the fact that Koch and his adherents have never insisted that the cholera bacillus is the only etiological factor in the production of an epidemic, but that they believe it to be the one factor without which no case of cholera can occur.

POSNER (*Berliner klinische Wochenschrift*, 1892, No. 48) further argues that three possibilities in accord with the prevalent theory present themselves in Pettenkofer's experiment: 1st, That neither he nor Emmerich afforded the necessary individual predisposition, that they were in a measure immune; 2d, That the bacilli were in some way deprived of their fullest virulence, as, for example, by an insufficiently neutralized gastric juice; or, 3d, That the

experimenters really suffered from mild attacks of cholera. He will admit only one thing in any case to have been proven by the experiment; namely, that the ingestion of cholera bacilli is not necessarily always followed by a typical severe case of cholera.

He refers to an interesting observation made this summer in Altona, that cholera developed in those houses in a certain street which were supplied with water from Hamburg, but passed over those houses receiving water from the Altona water-supply. He distinctly differs from Pettenkofer as regards the proper measures of prevention in time of a cholera epidemic, believing that our energies should be directed against the one clearly definable factor, the cholera bacillus, without which the disease cannot exist, rather than against other less tangible conditions whose agency is speculative, to say the least.

[It should further be remembered in connection with this experiment of Pettenkofer's, that the virulence of many of the known pathogenic bacteria undergoes attenuation after repeated cultivation on nutrient media, and of none is this more true than of the cholera bacillus. Pettenkofer's culture was obtained from Hamburg and is said to have been virulent, but it had been cultivated on agar and in bouillon, and the possibility of its having in that way lost a measure of its original virulence suggests itself.—J. S. E.]

The Viability of the Cholera Bacillus on Various Food-stuffs, etc.

Uffelmann in a recent number of the *Berliner klinische Wochenschrift* (1892, No. 48) records the results of an interesting investigation of the viability of the cholera bacillus on various food-stuffs and other necessaries of life, made with a view to gaining some definite information as to the danger of transport of the germs upon these substances. The experiments test the viability of the bacilli in water and milk, on bread, in butter, on meat, fish, vegetables, and fruits of various kinds, on paper, on coin, on both moist and dry clothing, and on his own skin. The possibility of the transport of the contagium by flies is also investigated.

Material from two cholera stools, both shown to contain large numbers of comma bacilli, was mixed with or spread upon these various substances, and inoculations of nutrient media were made at short intervals from the contaminated areas. In water the bacilli remained viable for from five to six days; in milk, for about three days; on the surface of bread exposed to the air, for about a day; between slices of bread kept more or less moist, for eight days; in butter, for three days; on cooked meat kept moist, for eight days; on apple and cauliflower, for four days; on paper, for about a day and a half; on copper and silver coins, for only ten minutes after thorough drying; on dry clothing, for four days, but on moist linen for twelve days or even longer. It was shown that for two hours after walking through cholera dejecta, house-flies were capable of infecting nutrient media, and that the dry skin of the hand preserved the germs alive for somewhat more than an hour after contamination.

These results are of much practical interest as showing the length of time during which contaminated food-stuffs may continue to be infectious. They also teach that the organic acids of milk, meat, fruits, butter, and sour bread

do not cause immediate destruction of the cholera bacilli, and that the duration of their viability bears a general relation to the degree of moisture in the contaminated substance.

Disinfection in Cholera.

Bornträger (*Deutsche medicinische Wochenschrift*, 1892, No. 40) suggests the use of dry heat in the disinfection of clothes and other articles contaminated with cholera. He admits that, for ordinary purposes of disinfection, this agent has been shown to be impracticable, owing to the high degree of dry heat necessary to kill the majority of the infectious microörganisms, and because dry heat has comparatively limited power of penetrating the articles to be disinfected. For cholera, however, he considers it exceedingly well adapted because of its simplicity, and he believes it, also, to be amply efficient on account of the vulnerability of the cholera bacillus to moderate heat and drying. An exposure of a few moments only to a dry heat of 100° C. is sufficient to kill the cholera bacillus. Bornträger therefore suggests that in time of emergency ordinary brick ovens, which may be quickly built, afford all that is really necessary for the disinfection of bedding, clothes, etc. The temperature should be kept above 100° C., and the articles to be disinfected should be loosely laid in the oven and exposed to this temperature for from one to two hours.

Such an oven was extemporized during the past summer by Bornträger in Sulingen, where he is health officer, and was used with success in the disinfection of the clothes of persons coming from Hamburg and Bremen.

The Transmission of Infectious Disease from Mother to Fœtus.

At the present time all questions relative to the hereditary transmission of disease, besides having great scientific interest, are of much practical importance. That pathogenic germs may at times be transmitted directly from mother to fœtus has been abundantly proven by numerous observations in cases of abortion during the course of infectious diseases, notably in typhoid fever (Eberth, Hildebrandt, Ernst); in pyæmia (Fraenkel and Kiderlen); in tuberculosis (Malvoz, Rindfleisch, Gaertner); and in pneumonia (E. Levy, Netter); and it has been demonstrated experimentally in animals, particularly as regards anthrax. The channel of infection has been believed to be the placental circulation, but exactly how the bacteria have found their way from the blood of the mother to that of the child has been an open question. Experiments have shown the possibility of the passage of bacteria through uninjured mucous membranes, and it has been suggested that similarly infectious microörganisms might pass through the uninjured placental vessels from the maternal to the fœtal blood. It has been more generally believed, however, that degeneration of the placenta, hemorrhage, and partial separation were necessary antecedents of such infection.

In the hope of deciding this question, Birch-Hirschfeld (*Zeigler's Beiträge*, ix., 383) has inoculated pregnant animals with anthrax, and has afterwards examined most carefully into the condition of the placental vessels. Goats, rabbits, white mice, and a bitch were made use of in the

experiments. Bacilli were found in the blood of the maternal and fœtal vessels and in places in the tissue of the placenta. No lesions discoverable with the naked eye were present in any of the cases, and as the result of careful microscopical examinations, the results of which are pictured in three plates accompanying the text, Birch-Hirschfeld is led to conclude that neither foreign particles nor bacteria can pass through the uninjured walls of the placental vessels; but, on the other hand, that no gross lesions, as hemorrhage or fatty placenta, are necessarily present in cases of infection from mother to fœtus, nor is any predisposing diseased condition of the placenta necessary. He finds sufficient opportunity for the transmission of the infection in minute lesions of the placenta set up by the lodgment of infectious emboli in the maternal vessels. These lesions are usually so small as to escape observation, and most careful microscopical examination is necessary for their discovery.

In conclusion Birch-Hirschfeld points out certain differences in the structure of the placenta in different animals, which would appear to make some species more prone to this mode of hereditary transmission than others, and he remarks that the delicate structure and exceedingly thin walls of the vessels of the human placenta must render it very liable thereto.

The conclusions reached by Birch-Hirschfeld as the result of his experimental study are borne out by a case reported in the same number of *Zeigler's Beiträge* (p. 428) by Schmorl and Birch-Hirschfeld, in which tubercle bacilli are shown to have been transmitted from mother to fœtus. The mother, a young woman twenty-three years of age, died during the seventh month of pregnancy with tuberculosis of the supra-renals (supposed to have been primary [?]), lungs, liver, kidneys, and retro-peritoneal lymph nodes. Tubercle bacilli were seen in the blood of the umbilical vein and in the liver of the fœtus, though no distinctly tubercular lesion was anywhere discoverable in its body. The presence of the bacilli in the fœtal tissues was further demonstrated by inoculations of guinea-pigs and rabbits with bits of the fœtal organs.

The placenta showed only very slight hemorrhagic spots in places, but scattered through it were small grayish areas about the size of a pin-head, whose minute structure showed them to resemble ordinary white infarctions, and in these, though not in the hemorrhagic spots, tubercle bacilli were found in large numbers. They were also seen in the maternal placental vessels and in the placental tissue in the neighborhood of vessels denuded of their endothelium. Lodgment of tubercle bacilli in the maternal vessels is supposed to have given rise to the minute infarctions and to the desquamation of the vascular endothelium, both of which conditions permitted the passage of the bacilli from the maternal to the fœtal blood.

Changes in the Heart Muscle in Infectious Diseases.

During the course of an infectious disease no single organ commands such close attention from the physician as the heart. Hope of recovery remains while it is known to be in good condition; with its failure comes apprehension. A knowledge, then, of the lesions which may induce this failure and of the symptoms through which they may be recognized is of the greatest importance.

These have been studied by ROMBERG (*Deutsche Archiv für klinische Medicin*, xlviii. 369, u. xlix. 413) in 11 cases of typhoid fever, in 10 of scarlet fever, and in 8 of diphtheria. The gross pathological changes noticed were slight, being confined to flabbiness of the heart, cloudiness, and, in a few cases, pronounced fatty degeneration of the muscle. Nothing of moment was observed in the endocardium, pericardium, or valves.

Microscopical examination, however, disclosed decided changes. Degeneration of the cardiac muscle was present in all the cases, often distributed in irregular patches. Its most constant form was a granular degeneration of the protoplasm of the muscle cells; but fatty, hyaline, and amyloid degenerations were also noted. These changes have been observed by former writers, but Romberg describes in addition a peculiar form of interstitial myocarditis which he attributes to the action of the toxines of the various infectious diseases upon the tissues of the heart. This infectious myocarditis shows itself by spheroidal-cell infiltration of the connective tissue stroma, and was observed in 6 of the 11 cases of typhoid fever, in 7 of 8 cases of scarlatina, and in every one of 8 cases of diphtheria. The lesion was irregularly distributed, seemed to bear no definite relation to the areas of degeneration described above, and in no case were the specific bacteria of the disease discovered in it. The bloodvessels of the heart were either normal or presented only a slight degree of arteritis. No lesions of significance were discovered in the heart ganglia.

Romberg attributes much importance to this lesion. In cases of recovery from the acute disease, he believes it to be followed by the formation of patches of dense connective tissue which may seriously impair the efficiency of the heart's action and may ultimately lead to secondary changes in the heart similar to those observed in cases of interstitial myocarditis resulting from disease of the coronary arteries.

In the second part of the paper the symptoms occasioned by these lesions are discussed, but without any very definite result. The cases were not well adapted to the tracing of any very direct relationship between symptoms and lesions, as death occurred sudden l leaving very little time for the development of any pronounced train of c diac symptoms.

Similar lesions are reported by RABOT and PHILIPPE (*Archives de Médecine expérimentale et d'Anatomie pathologique*, iii. 646) as the result of study of the hearts of forty-five cases of diphtheria.
